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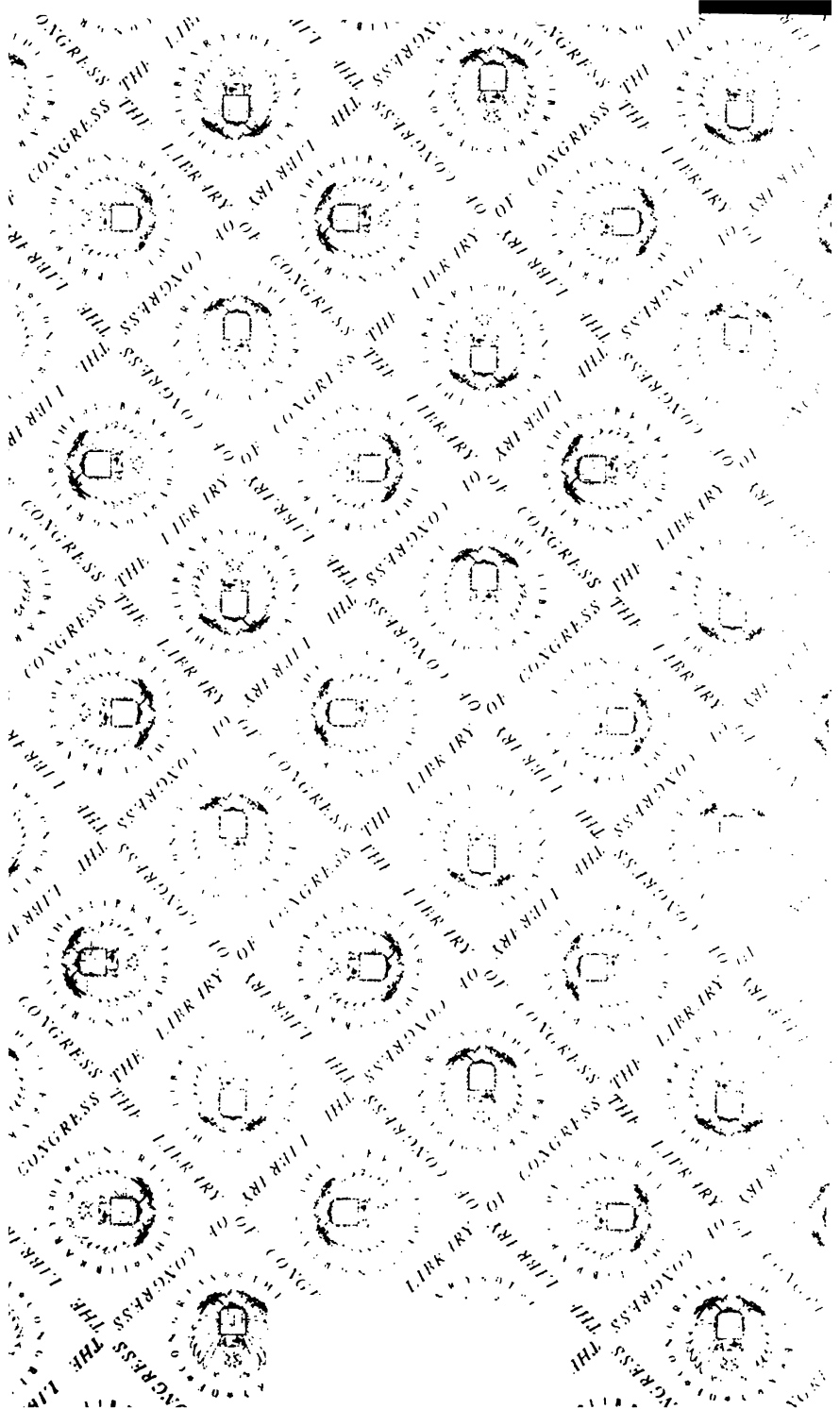
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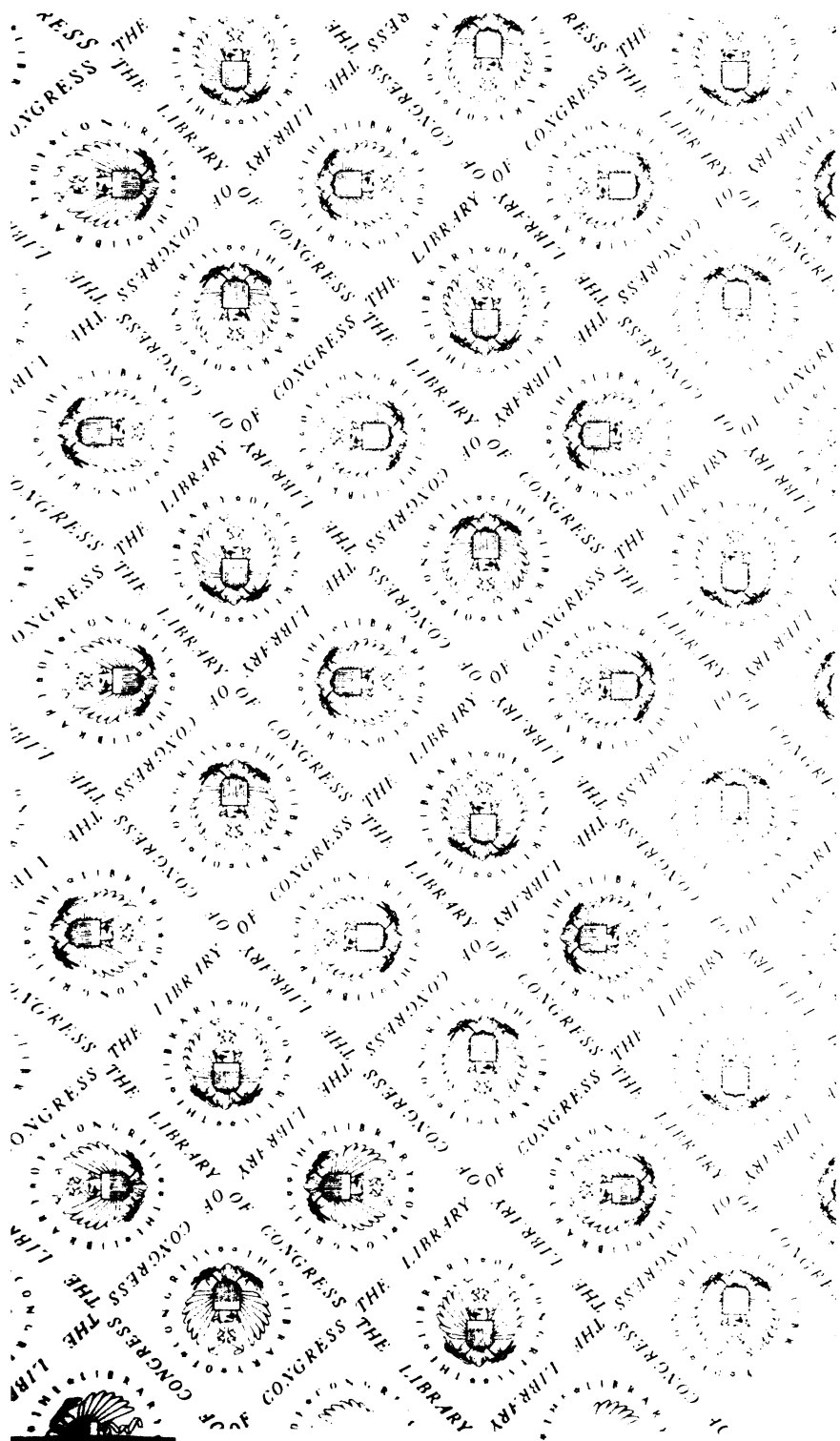
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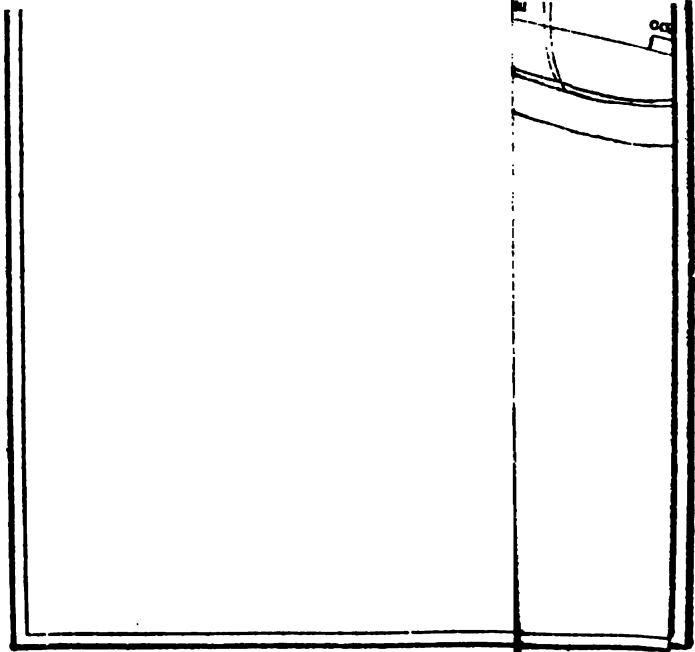
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JOURNAL

OF THE

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

FOURTH SERIES.

V O L. X.

1899-1900.

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WORK AND LEARN.  
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LONDON :

EDWARD STANFORD, 26 & 27, COCKSPUR STREET,
CHARING CROSS, S.W.

1900.

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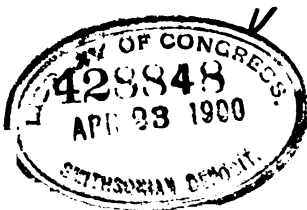
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"He that goes about to forward agricultural improvement must begin by finding out the true reasons of what is called routine, or the 'custom of the country.' It sometimes happens that these reasons are only accidental, and then you may dismiss them fearlessly; but often it turns out that every-day practice rests on a solid foundation of facts; and then if you make an onslaught on local prejudices, they will be sure to beat you.

"The true course for the agricultural improver is, to take one step at a time, to gain a clear insight into facts by experience, not to try to go too fast, and to trust to the work of time.

"If practice which sets up to do without theory is contemptible, theory without practice is foolhardy and perfectly useless."—*From the Rural Economy of England, Scotland, and Ireland* by LEONCE DE LAVERGNE.



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THE LATE SIR JOHN FARNABY LENNARD, BART.

(From a Photograph by G. Jerrard, 107, Regent Street, London.)

JOURNAL
OF THE
BATH AND WEST AND SOUTHERN COUNTIES
SOCIETY.

Original Articles and Reports.

I.—3n Memoriam.

Sir John Farnaby Lennard, Bart.

By THOS. F. PLOWMAN, Secretary and Editor.

THE closing days of 1899, so fraught with sorrow to the nation at large, brought a special sadness to the Society in the death of Sir John Lennard.

The sudden tidings that he had passed away after only a few days' illness came as a painful shock to his fellow-workers. His store of energy seemed so inexhaustible, so youthful was he in sympathies, so active and alert both in mind and body, that those associated with him thought only of a continuance in the future of that life and vigour which had done so much for the Society in the past. Octogenarian though he was, age sat so lightly upon him that little count was taken of it.

He died, as he would have wished, in harness, no waning of intellectual power, no abatement of ardour, giving previous warning that his race was well-nigh run. Though he was in his eighty-fourth year, having been born in 1816, his mind was as bright, his perception as keen, as ever it was. Length of days, with the additional experience accompanying it, served but to increase the value of his services, and so correspondingly adds to that sense of loss which his death creates.

He presided with his usual ability at a meeting of the Society's Stock Prize Sheet Committee held on the last day of September, and was only prevented attending the meeting of Council at

the end of October by an important public engagement. fact, he was taking all his usual interest in the Society's affairs up to within a few days of his decease.

Sir John was the eldest son of the late Lieut.-General William Cator, K.C.B., his mother being the only daughter of Sir John Farnaby, Bart., and the grand-daughter of Sir Samuel Lennard, Bart. He came into possession of Wickham Court and the estates attached thereto upon the death, in 1861, of his uncle, Sir Charles Francis Farnaby, Bart., under whose will he assumed the surname of Lennard.

Previous to settling down to the life of an English country gentleman, Sir John had an honourable career in the army, and his military training may perhaps have had something to do with his decision of character and the method and precision which he invariably brought to bear upon everything he put in his hand to. He was educated in France and at the Royal Military Academy, Woolwich, and received a commission in the Royal Artillery in 1835. After serving in the Ionian Islands, he was sent out to Spain, under Lord John Hay, in 1837, to support the Spanish Legion under General Sir de La Romana. He afterwards commanded a field battery in Canada and retired from the service in 1852. In the following year he was instrumental in raising the Kent Artillery Militia, and was appointed its first Lieut.-Colonel Commandant. The regiment was embodied for service during the Crimean War, and for the long period of twenty-three years Sir John was its commanding officer. He was created a baronet in 1868, being the last baronet created by the late Lord Beaconsfield.

On his retirement from active service Sir John began to interest himself in county matters and in agriculture. In connection with the latter he particularly directed his attention to the breeding of stock, and of Guernsey cattle especially. Of these he had a pedigree herd, with which, until he ceased exhibiting some years ago, he carried off many prizes at principal Shows, and he was an active member of the Court of the English Guernsey Cattle Society. He was an exceedingly good judge of stock, and his services in this capacity were often in request with agricultural societies. He prominently identified himself with the Southern Counties' Agricultural Association, whose field of operations embraced the counties of Hants, Berks, Oxon, Surrey, Sussex, and Kent, and was a member of its governing body. This ultimately led to the establishment of his long connection with the Bath and West Society. In 1868 the Hon. and Rev. S. Best, on behalf of the Southern Counties Association, made overtures to the Bath and West Society for an amalgamation with it. Sir John

joined in supporting this, and was appointed one of the representatives of the Association to confer with the Society upon the subject. The amalgamation having been effected, Sir John became a member of the Council of the united bodies. Here his capacity for usefulness appears to have been speedily recognised, for he was soon appointed a member of the Stock Prize Sheet, the Implement Regulations, and the Judges' Selection Committees, whilst at the first Show under the new arrangement, which was held at Southampton in 1869, he acted as Supernumerary Steward of Implements. Of the Stewards who then held office, he was the only one still on duty in 1899. In 1870-2 he was a Steward of Stock, and in 1873-4 a Steward of Arrangements. In 1875 he was again appointed a Steward of Stock, and not only retained this office to the last, but, so far as I can ascertain, never once missed, during the whole of this period, fulfilling its duties at the Annual Show.

In 1881, in recognition of his many and valuable services, he was elected a Vice-President of the Society; in 1888, upon the death of Mr. Jonathan Gray, he was appointed one of its three Trustees; and in 1892 he succeeded the late Colonel Luttrell as Chairman of the Stock Prize Sheet and Judges' Selection Committees. He was also a member of the Agricultural Education, the Experiments, the Dairy, the Railway Arrangements, the Show Dates, and the General Selection Committees. The large share he thus had in the government of the Society sufficiently testifies to the high esteem in which he was held by his colleagues.

As a Steward of Stock he was indefatigable, delegating to no one what he felt he ought to do himself. From morn till eve, in sunshine or in rain, he was always to be found at his post in the Show Yard, intent upon the work of his department. He would thus be on his legs all day—this was the case even so recently as at Exeter last year, when he was eighty-three years of age—and the amount of walking and standing about he would undergo without complaining of weariness made many a younger man marvel. If he showed any signs of fatigue at the end of a particularly hard day he would say, with a confident smile, "a night's rest will soon put that all right." It invariably did, and the next day he was up in the Yard betimes as bright and fresh as the youngest of his colleagues, and with much of the cheerful lightheartedness of a schoolboy out for a holiday. No doubt his powers of endurance were greatly helped by his methodical and regular life, for he was extremely abstemious, and having laid down a rule for himself, was careful to observe it. Physically and mentally, therefore, he seemed always fit, and to no one could the description *mens sana in corpore sano* be

more truly applied. The cheery optimism with which he always made the best of everything was a help to others besides himself, especially in those times of stress and strain to which show yards are liable. When the rain pelted as pitilessly as it can at a Bath and West Show, he would, wet as he often was, bid all concerned to take comfort in the thought that "no doubt this rain is doing the country a lot of good," and then he would add "the people will stream through the turnstiles to-morrow—when it is sure to be fine—to make amends." His genial nature always induced him to look at the bright side of things, and reacting upon those around him put everybody in good heart. But, feeling the need of sunshine himself, of late years he came not alone to the Show Yard. Many will know and understand how much this conveys, and how incomplete any record of him would be without a word of that companionship which meant so much to him and not a little to the Society, for it represented a dual attachment to it. As "the devoted couple," which, with playful but all-expressive sincerity, they came to be called, Sir John and Lady Lennard cannot be dissociated in any Show Yard memories.

By Exhibitors and their employés he will be much missed, for he had a practical acquaintance with their difficulties and so could make allowances for them. At the same time, he never permitted any one to play fast and loose with rules and regulations, which, as he would say, "are made to be upheld." Any one who thought Sir John could be trifled with in this respect soon discovered his mistake, for, however gentle his accents—and they were seldom otherwise—there was a reserve of quiet force behind them which took some reckoning with. He was always open to argument, but when once he had made up his mind upon a point, he knew, as an old soldier, how to stand to his guns. In his department, he looked after the interests of the Exhibitors as well as those of the Society and if he found a servant neglecting the stock in his charge he would give the offender a very bad quarter-of-an-hour. With the Show officials, from the highest to the lowest, he was pre-eminently popular, for, although he expected every man to do his duty and did his best to ensure this, he was the most kindly and considerate of men, and showed in numberless quiet ways the personal interest he felt in the well-being of all who were associated with the Society's work.

He was frequently called upon to preside over Meetings of Council, and his intimate acquaintance with the recognised rules of debate and the tact and courtesy with which he conducted the proceedings, did much to facilitate the despatch of business and to smooth over any difficulty that

it arise. He could be firm, and, on occasion, even autocratic in his ruling—which is tantamount to saying that, being a strong man, he could take a strong line. He had a horror of hasty legislative legislation, a *festina lente* policy being much more to his mind, and he preferred diplomatic methods to a *coup de main*. Whilst he was never a speech-maker, in the sense of delivering set orations, his remarks, though brief, were always to the purpose. He spoke with polished ease, and at public occasions no one could give more graceful or felicitous expression to the sentiments of those of whom he was the mouthpiece.

In view of the many qualifications for usefulness which, as has been pointed out, he possessed, it is not surprising that he was able to occupy an exceptional position in the Society. His practical acquaintance with the needs of agriculture, his clearness of judgment, his firm grasp of the subjects with which he had to deal, and his staunch devotion to the cause, would go a long way to account for this. But, over and above all, there was a sincerity of purpose, a disinterestedness of aim, and a charm of personality which won for him not merely the esteem, but the affection of his colleagues. He had no axe to grind, no lobby to ride, save and except the one all-paramount in his mind—the welfare of the Society—and every one knew

that the Society, however, was very far from absorbing all his energies, as his native county could testify. I was lamenting

Kent man the loss which his death had inflicted upon us, and he replied, “Your loss is as nothing to ours, for he was a man for us. And who can supply his place?” In this action the multifarious offices he took upon himself amply testify alike to his self-sacrificing zeal and his indefatigable industry. For several years he was Chairman of the Court of General Sessions, and when this became extinct the county acknowledged his faithful service by presenting him with his portrait, which now hangs in the Council Chamber of the Sessions House at Maidstone. Upon the passing of the County Government Act in 1888, he was elected upon the County Council as a representative of one of the Bromley divisions, and then was unanimously chosen as the first Chairman of the newly-constituted body. To the fulfilment of arduous duties thus devolving upon him, he brought to, in addition to conspicuous ability, all the earnestness and loyalty of which he was capable—and that represented a great

reward. He found his reward, which to him was all-sufficient, in the grateful appreciation of those who were best acquainted with his work, and who on every occasion re-elected him to the office. The attainment of his eightieth birthday afforded a

further opportunity, of which full advantage was taken by colleagues, to convey to him, in the form of a congratulatory address, their high sense of the value of his services.

As evidence of the mastery he obtained over any subject which he took in hand, it may be mentioned that when the County Government Act was under discussion he read a valuable paper upon it at the Central Conference held in London, and many of the suggestions contained in it were subsequently adopted by the Government and incorporated in the Act. He was also a recognised authority upon all matters relating to Poor Law administration, and on several occasions he presided at the Annual Poor Law Conference. He had likewise thorough acquaintance with all questions relating to water and sewage.

But onerous as were the duties attaching to the position Sir John occupied, as the head and front of local government in Kent, he nevertheless found time to give close attention to the wants of the immediate district in which he resided, for he was Chairman of his Board of Guardians, of the West Kent Milk and Sewage Board, of the Bromley and Beckenham Joint Hospital Board, and of his own Parish Council. He bestowed the same unremitting care and attention upon these offices as upon the most important ones he held. Sustained by an ever-present desire to give of his best for the benefit of those in whose midst he dwelt, he never spared himself even at a time of life when most men so situated would have felt justified in seeking well-earned rest.

He was much interested in the subject of agricultural education, and the establishment, by the Counties of Kent and Surrey conjointly, of Wye College, was greatly due to his influence and support. Although, on account of his other work, he would not undertake the Chairmanship, he was, from the first, Vice-Chairman of the Board of Governors, and Wye College has owed much of its success to his active efforts on its behalf. Its Principal (Mr. F. D. Hall) tells me that two points particularly struck him in his intercourse with Sir John. One, was the great desire he always manifested that all persons connected with agriculture, whether farmers or labourers, professors or students, should be filled with a spirit of honest work; he thought that not a little of the distress in agriculture was due to a carelessness about workmanship and the management of details, and he looked to the growth of Wye College to exert an influence for the better in this respect on the young farmers passing through it. The other point, Sir John's great belief in the value of local knowledge and experience; whether in the management of the land, the br

of stock, or the choice of seeds, he considered that the traditions of a district were founded upon long practical experience and should not be lightly departed from.

He was, and had been for many years, the representative of the Kent County Council on the governing body of the Horticultural College at Swanley, and only a few days before his death he took the chair at a lecture there. He was a hard-working and regular attendant at all its Council and Committee meetings, and rarely failed to pay a weekly visit to the College. By the interest he showed in their pursuits, he endeared himself to staff and students alike, and a students' library is being formed at the college in his memory.

To a great extent his work was his recreation, but he was a good all-round sportsman, a capital shot, and a thorough judge of horse flesh. He especially delighted in hunting, and was probably the oldest follower of the West Kent and Old Surrey Hounds. Although he enjoyed it as much as ever, last season he so far deferred, though reluctantly, to age, as to hunt only about once a fortnight instead of, as in previous seasons, three days a week. It was said—and it would be thoroughly characteristic of him—that he at once increased his public work as a recreative compensation.

Of his personal worth in all the private relations of life, this is hardly the place to speak, but those who had the privilege of his friendship know that the principle underlying all he did was the same throughout; he was too transparently sincere to have a dual personality. The charm of his manner, the grace of his courtesy, were for all alike, were part of himself, and so always sat easily and naturally upon him. A well-read, well-travelled man of the world, he had a varied knowledge of men and things and a power of imparting it which made him a welcome conversationalist. With a reverence for the past, he united a sympathy with the aims and aspirations of the present, and he could understand and appreciate the necessities of an age of progress. Hence, he kept himself up to date with respect to the movements of his time, whether social, commercial, or political. Refined and cultivated in his tastes, he was never seen to greater advantage than in his ancestral home—a treasure-house of artistic and historic possessions—where, amid many beautiful surroundings, he enjoyed a domesticity which was eloquent of happiness. In this haven of rest he found all he wanted outside his work. Lofty in his ideals, stern, almost, in his uprightness, he was, withal, the most lovable of men. As a correspondent, who knew him well, wrote, "He was my idea of what an English country gentleman should be, bold and strong and gentle."

In Memoriam.

John Ford, some centuries ago, wrote of just such a one when said:—

“He is a noble gentleman: withal
Happy in 's endeavours; the general voice
Sounds him for courtesy, behaviour, language,
And every fair demeanour an example;
Titles of honour add not to his worth,
Who is himself an honour to his title.”

He was in the midst of his labours for the common weal when he was bidden, in all gentleness, to desist. On Wednesday, December 13th, he presided at a Committee of the County Council, and on the following morning admitted that he felt unwell. As he seemed unwell, his medical adviser was called who found that he was suffering from pneumonia. His strength then gradually failed, life almost imperceptibly ebbing away, till, on Thursday, December 21st, “God’s finger touched him and he slept.”

Bacon says, “Believe it, the sweetest canticle is ‘Nunc nittis,’ when a man hath obtained worthy ends and expectations.” If this be so, surely never a one had better title to rest and peace which this implies than he who, as “Sir John,” will always live in the hearts of his old Bath and West associates as the embodiment of the Society’s best traditions. Happy the Society that can command such fidelity, and, moreover, retain it for well nigh half a century.

A concourse of friends and many representatives of the public bodies he had served so well, gathered at the graveside West Wickham churchyard, when, on December 27th, he was laid to rest. High and low, rich and poor, joined in this tribute to a memory that will long be kept green, and the manifestations of sorrow bore eloquent testimony to the love as well as to the honour in which he whose spirit had departed was held.

At the January meeting of the Society’s Council, the chairman (Sir C. T. D. Acland) having referred to the recent death of Sir J. F. Lennard and to his many great services to the Society, said that for a period extending over more than forty years he had most actively identified himself with its work. They had long been accustomed to look to him for advice and guidance in all that concerned the best interests of the Society, for he had not only a great practical knowledge of the world, but, united with it, a conscientiousness and sincerity of purpose which rendered his counsel of the highest value. They felt that, by his death, they had lost a personal friend, and one who

was beloved by all who were ever brought into close connection with him. He begged to move:—

“That this Council desires to place on record its deep sense of the great loss which the Society has sustained by the death of Sir John Farnaby Lennard, Bart., who—as a Trustee and Vice-President, as a Chairman of Committees, and especially as Senior Steward of Stock—for many years rendered invaluable service. His practical knowledge, wise counsel and untiring energy, were of inestimable advantage to the Society at large, while his genial presence, unvarying kindness, and loyal devotion endear his memory to his colleagues especially, by whom he will always be held in affectionate remembrance. That a copy of this resolution be forwarded to Lady Lennard, accompanied by an assurance that the sincerest sympathy is felt by the Council with her and the other members of her family in their bereavement.”

This was seconded by Colonel Best, and unanimously agreed to.

II.—*The Revival of the Butter Industry.* By ERNEST MATHEWS,

DURING the latter half of the nineteenth century Agriculture in England cannot be said to have been neglected. A large amount of money has been spent on it; County Agricultural Societies and Breed Societies have been formed; Agricultural Colleges have been opened; farming machinery has been almost revolutionised; Technical Education Classes under County Councils have been started; weekly agricultural newspapers dealing with every side of it have multiplied, while most of the daily papers have once a week a special column devoted to Agriculture; and last, but not least, a Board of Agriculture, with a responsible Minister at its head, is now one of the recognised Government Departments. Yet, notwithstanding all these advantages, the general financial condition of the farming community to-day is not so sound as it was fifty years since.

Several causes may be assigned for this. The low price of wheat, the high price of labour, the increase of railway rates, foreign competition, combined with shortness of capital, have all assisted to make farming difficult, and more or less unremunerative; but may it not also be said that one of the principal reasons why the farmer of to-day is not so prosperous as were his forefathers is that, too often prejudiced in favour of old methods, he has not always been prepared for the rapid changes which, in these days of steam and electricity, have taken place.

THE CAUSES WHICH HAVE PREJUDICED THE BUTTER INDUSTRY

The history of the butter industry is a case in point. If it were possible to get at the amount of money paid for butter by this country to Denmark, Holland, and France during the past sixty years, the figures would scarcely be credited; looking at the present large importations from these countries as well as from our Colonies, it seems hard to understand how such an industry should have been allowed to pass over England without strenuous efforts being made to keep it.

In the following pages I propose, if possible, to trace the causes which have led to the loss of the trade, and, profiting by the experience of the past, to make certain suggestions which, in my opinion, must be adopted if this industry is to be recovered.

To begin with, the principal reason for the loss of the trade was undoubtedly the badness of the English butter; too much of the butter made in farmhouses was nasty. The scientific methods of to-day were unknown; a "cold hand" was a great recommendation for a dairymaid; "overchurning" and "overworking" butter were terms scarcely understood, and the use of the thermometer would have been ridiculed. But the fault did not entirely lie in the manipulation. Any butter was considered good enough for butter; the cattle were fed unsuitable foods; and there was a want of cleanliness in the cow sheds, in the process of milking, and very often in the butter itself. With all these hindrances it is no wonder that the butter was bad both in flavour and quality.

Meanwhile on the Continent improved systems of dairying were being studied and practised, with the result that the butter made there was infinitely superior to the English. The foreigners saw their opportunity and made the most of it, and since they first exported butter to England have left no stone unturned to keep the market there for themselves. Over forty years ago good foreign butter of uniform quality was being sent into the London market and retailed at the fair price, at that time, of 1s. 6d. per pound. This was before the days of butterine, which was not invented until shortly before the Franco-German war in 1870.* With the discovery an era of fraud commenced. When not sold as butter it was too often the case, butterine, or, as it is now called, margarine, was mixed with butter, and so skilfully was done, that its presence was most difficult for the analyst

* "The Book of the Dairy." Translated from the German of W. Fleischmann, by Aikman and Wright. Blackie & Sons, Limited, 1896. ;

ist to detect, and even now this is the case when the
are is judiciously compounded.

argarine and butter mixtures naturally reduced the price of
ure foreign butter, which of course reacted on the inferior
sh butter, bringing it down so low, that the farmer soon
vered that butter-making did not pay.

this time, however, the demand in towns for good milk
apidly increasing, and with improved facilities of transit
il the farmer found that, with a reduced price for butter,
n increased price for milk, the milk trade was the more
able, and, except for the provision of the small quantity
red on the farm itself, butter-making was almost every-
e given up. This was not surprising. The milk trade
red less work on the part of the farmer and his household.
ows had only to be milked, the milk to be sent off, and
ork was done. The labour and trouble of making butter
thus spared to the household, while there was a good profit
the sale of the milk.

t there was another reason, and one that even to-day is a
bling-block in the way of those who would encourage the
al of the butter industry.

eat Britain has always been noted for its beef. Is not the
beef of Old England the theme of one of her national
? The breeding and feeding of the best animals for the
er was, and it is to be hoped will continue to be, one of
hief features of the farmer's business.

the forties there were few Agricultural Shows equalling
mportance that of the Smithfield Club, which in 1898
emorated its centenary. It was regarded as the ideal
of Show, and all the other and later formed Exhibition
ties took it more or less as their model. The exhibitor
ally fell into the same groove, the cattle exhibited at the
er shows being in fat stock condition, almost, as it were,
ining for Smithfield, while practical classes, in which by
s of milking or butter test trials the cattle could be judged
sults, were unknown. The main object was beef, and the
es gave their awards on fat stock lines. The type having
become fixed, all cattle, whether for milk or not, were bred
ese lines; they were fed too well, and on many farms,
t in the case of very heavy milkers, were, as soon as they
dry, sold to the butcher.

e various town dairies at that time were almost exclusively
lied with cows of this stamp. The period of lactation was
onsidered so much as the aptitude to fatten, the sale of
ilk, and the price the fat animal would realise when done
; these being relied upon to yield a fair profit to the

dairyman after deducting the prime cost of the cow and the expenses of feeding and attendance.

Hence arose the general purpose cow. She paid the breeder; she paid the milk seller. The system had its drawbacks. Cattle bred from valuable milking strains, which should have been kept for breeding, were no doubt frequently sacrificed; but "sufficient unto the day" was the maxim—a profit was made, and the future was left to take care of itself.

This state of things, however, could not go on indefinitely. Store stock began to be imported from abroad, and with the improvement in the fast ocean steamers animals were landed in fair condition. They were readily bought by the graziers and improved rapidly on our pastures. Although not so good as the prime English and Scotch beasts, they proved in trade a formidable rival to the cow beef, and the prices paid for the latter naturally fell.

The prohibition later on of the importation of live stock (animals having now to be slain at all ports on arrival) did not affect the frozen meat trade, and with improved vessels and storage chambers the meat arrived in such good condition while the prices were so low, that the cow, or second-class beef was still less in demand. Meanwhile, the milk trade was growing, and increased competition brought lower prices, so much so that very little profit was left to the farmer after deducting the expenses of getting the milk to market.

This, together with the large imports of butter from abroad drew the attention of those who were interested in farming to the making of butter. Visits were paid to the factories on the Continent, and the feasibility of getting back the butter trade was well, although not too wisely, advocated. Apparently all that was necessary was to build factories and educate dairymaid and the trade would be recovered. The capabilities and feeding of the cattle, the period of lactation and the butter ratio were never considered, the consequence being that the butter made in the factories was not so good as the foreigner's, and financially the movement was not successful, except in those few cases where the above-mentioned points were made a *sine quâ non*.

It must not, however, be supposed that factories were altogether a failure. They opened the eyes of the farmer and called the attention of the public to the butter question, and in Ireland, where they are run on co-operative lines, they have improved the quality of the butter, and enabled the farmer to get a slightly better price for milk, although the price would not be thought satisfactory in England.*

* "The Irish Creamery System," by Walter Thorp, B.Sc., F.C.S. ("Journal of the British Dairy Farmers' Association." Vol. xiii., Part II., 1898.)

The foregoing is a brief retrospect of the causes which led to the loss of the butter industry, and if it is to be recovered, the experience of the past must be taken as a guide to enable the mistakes of former years to be avoided.

IS THE TRADE WORTH RECOVERING?

But it may be asked, is the trade worth recovering? Can sufficient profit be made to induce the farmer to take up dairying again? In my opinion, both these questions can be answered in the affirmative. The best English butter is superior to any that is imported, and when once the taste for it is acquired there will be no difficulty in selling it at the highest price; but if success is to be assured, old prejudices must be put aside, and the business must be taken in hand thoroughly.

THE SALE OF FOOD AND DRUGS ACT.

At the present time there is an opportunity which should be made the most of. The Act to amend the law relating to the sale of Food and Drugs, which was passed during the last Session of Parliament, should greatly assist in checking the sale of margarine and butter mixtures as butter. All, however, will depend on the energy, or want of it, that may be shown by the Commissioners of Customs, the Local Government Board, the Board of Agriculture, and the Local Authorities, in administering it, and it must be to the last named that the farmer will have to turn to see that the provisions of the Act are taken advantage of, and that they are not treated as a dead letter. The measure is an excellent one, conceived in a true spirit, and should be the means of checking fraud, while at the same time it in no way hampers the foreigner, or protects the home produce.

THE RIGHT SORT OF COW.

The first essential to making good butter is to have the right sort of cow, and in selecting her the idea of being able to combine butter and beef must be given up. There are many excellent breeds of cattle in England which answer the description of the general purpose cow, but rarely, if ever, can the individual animal be found that will milk profitably, and at the same time put on flesh. The shape and appearance of the good milking cow show her inaptitude to fatten, although she may breed stock which, if judiciously fed, will develop into butcher's beasts. The best description of the butter cow is

given in Mr. Hazard's book, "*How to Select Cows on the Guenon System*," a book that should be in the hands of every dairy farmer, and should be read and read again.* It is as follows:—

"We first look at a cow from the front, and see that she widens as she gets back to her hips, or is wedge-shaped. Next, we look at her side, and we again see that she rises on her back and descends on the belly as she goes back to the tail, or in other words, she is wedge-shaped, too, from this point of view. These two looks at her have enabled us to see that she has a feminine appearance; that her head is small and neat in proportion to her body, with a waxy small horn, a mild but large eye, a broad muzzle, and that it is well set on her neck; that she has a good chest, a large deep paunch, with large full ribs, fuller below, and joined to a rather high back-bone; that is to say, she has not the breadth of back we look for in a beef animal. If the chine is double, it indicates a cow above the average; if the chine is single, sometimes we can lay our three fingers in three depressions in it, at about the middle of it, it shows that she is a loose rangy cow, and fitted for her work. Now we will look at her udder, and see that it runs forward as level as possible to the belly, and that it is large, with four good sized, well shaped teats slightly strutting from each quarter. Now we gently approach her, and pat her to gain her confidence, and get a chance to feel her hide, her milk-veins, and examine her escutcheon. If we find her skin is thin, soft, and greasy, with short fine hair with rather a furry nature, and showing the skin yellow under it, that her udder and her perineum have soft thin skin, with very short furry hair; that her milk-veins are large, zigzag and knotty, entering the body with good sized holes, and particularly if this vein is double, extending and ramifying over the udder well back in prominent veins, and if the veins extend over the perineum, we may then with great confidence look for a large well shaped and formed escutcheon. . . . We feel sure that a loose, open made cow, rather pointed or sharp and well defined, and the contrary of what we would look for in a flesh or beef producing animal, with a skin mellow and yellow covered with soft fine hair, must be a good rich milker and butter-maker; for we never saw a thick hard skin cow, with coarse long hair, that was a good butter-maker, or fit for anything but giving poor milk, if a strong milker."

It has been my practice of recent years, at the Shows where I have tested cattle for butter, to examine and take notes before the tests came off, of all the competing cows on the lines laid

* "*How to Select Cows on the Guenon System Explained*," &c., by Willis P. Hazard. Trübner & Co., London.

in the above extract, and so to try and forecast the results of the trial, and I am perfectly satisfied, from the comparison of my notes and the final awards, that the description of the cow given by Mr. Hazard is reliable. If the prize cattle at the milking and butter test trials at the Tring and London Shows are examined, they will be found to have the special characteristics just mentioned, showing that, however much they may have improved in other ways since Guenon's time, their dairy characteristics are still the same. The main point, therefore, in selecting butter cattle is to select the best for the butcher and to buy only those cows which have the best dairy characteristics.

PERIOD OF LACTATION.

The period of lactation, or the length of time a cow will milk, is another most important point, and one that does not seem to be highly appreciated. The "escutcheon," or "milk mirror," is a fair guide to what may be expected from a cow on this point, but weekly records of the milk are more reliable, and if these records are compared with the escutcheons and general appearance much valuable information will be learnt.

The heaviest milkers are not always the best cows, as many of the lightest giving comparatively a small quantity will continue to milk almost up to her next calving, yielding in the long run more milk, and being therefore the more profitable cow for the

farmer. As a rule, the smaller the yield, the richer is the quality of the milk, and similarly the smaller breeds of cattle generally give the richest milk. The richness of milk is due to the properties of the milk globules. Milk containing large and regular sized fat globules yields up all the butter fat in the churn, and, all other conditions being equal, makes better butter, both in flavour, texture, and quality, than that containing small and irregular globules.

The trade or business of the farm should therefore determine the breed of cow to be used. If milk is required the larger breeds of cattle should be kept; if butter, the smaller ones.

A study of the butter ratio figures of all the cattle tested at the Tring and London Dairy Shows will prove that in the Jersey cow it takes from $1\frac{1}{2}$ to 2 gallons of milk to make a pound of butter, whereas in other breeds the ratio varies from 2 to $3\frac{1}{2}$ gallons. The milk from Jersey cows contains large and regular-sized fat globules; and it is certain that the excellent dairy qualities of the Jersey cow (including specially her long period of lactation) have been developed by the care and attention exercised by the breeders in the island during the past

hundred years,* and by the value placed on the theory of the escutcheon. In my opinion there seems to be no reason why other breeds should not be equally improved as regards their dairying qualities; but of course it must be a work of time, and the idea of combining flesh with butter must first be given up.

In Jersey no bull can gain a prize (a very essential thing in that island) unless he is exhibited with his dam, or in the event of the dam having died, unless she has been previously exhibited, and the number of points gained by her recorded. All prizes are given on points, and in the bull classes the points of the dam are added to those of the bull, the award going to that animal which gains the greatest number of collective points. This ensures good dairy ancestry on the sire's side.

OVER-FEEDING.

The over-feeding of young stock as usually practised in England is very detrimental to the development of milking qualities, and is a matter which deserves attention. Heifers for the dairy should be fed differently to those intended for beef. This holds equally good with Jerseys as with others; many a good Jersey heifer with undeniable ancestry has been spoilt through too high feeding when young.

DAIRY CLASSES AT SHOWS.

The classes for yearling heifers at our Summer Shows are productive of much harm. Except for beef breeds all such classes should be done away with, and no heifer should be shown until she is in milk. Under the present system of judging at the breeding Shows, meat is the first consideration, and dairy cattle have little or no chance of winning a prize. This should be altered; milking cattle should have special classes and special prizes. All animals should of course be eligible for their respective herd books, but they should be judged on dairy points, and, if possible, be also tested for milk or butter, as the case may be. The Red Polled Society have started prizes on these lines at the Norfolk and Suffolk County Shows; an example which might well be imitated. If the breeding of good milking cattle were encouraged, the quality as well as the quantity of milk would be improved, and with strict attention to the lactation period our English breeds of cattle might even come up to the Jersey breed in these two respects, in which at present they are deficient.

* The Jersey—mis-named "Alderney"—Cow, by Col. Le Conteur. Vol. v. "R. A. S. E. Journal," 1844.

FEEDING.

The feeding of cows for butter is very important, for however good the dairying may be, unless suitable foods are given the utter cannot be first-rate. This is a question to which special prominence should be given wherever dairying is taught, as a good dairymaid should be able to account for anything that is wrong with butter. At the butter test trials, where all the milks and creams are treated precisely alike, the quality of the utter varies considerably, and, allowing for the difference in the breeds of the cattle tested, the variation in the butters is clearly traceable to the foods. Where the cows are entered both for the milking and butter prizes the butter is invariably pale and soft, the forcing foods given to increase the flow of milk spoiling the quality of the butter, while where they are entered only for butter the quality is usually good.

It should always be remembered that although it is possible by feeding to increase the yield of milk, it is generally at the expense of quality; and further, that while the quality of milk may be easily spoilt by injudicious feeding, it is very difficult to improve it.

Although a little wide of the subject, it may be mentioned here that under sect. 4 of the Sale of Food and Drugs Act, 1899, the Board of Agriculture may fix a standard for milk, so that the feeding of cows where milk only is sold will require a little more scientific attention in the future.

It would be beyond the scope of this article to go fully into the question of the feeding of cattle for butter, more particularly as the subject has been fully treated in a book published by the English Jersey Cattle Society within the last twelve-months,* but there is no question that good and economical management will be found to tell largely when making up a balance-sheet.

CLEANLINESS.

Cleanliness in the cow-sheds and during milking is absolutely necessary, but the difficulty of getting good milkers is increasing. The milker's hands,† as well as the udders of the cows, should be thoroughly cleaned, and the milk should not be allowed to stand in the cow-sheds. If the wives and daughters of our farmers and labourers would only undertake to milk the cows it would be a great boon. Women are invariably better milkers than men, they treat the cows kindly, and their presence in the

* "Jersey Cattle: their Feeding and Management." Vinton & Co.

† Report on "The Investigations into Cheddar Cheese-Making," by F. J. Lloyd, F.C.S., F.I.C., issued by the Board of Agriculture, pp. 6, 174, 175.

cow-sheds would ensure more cleanliness there. The saving to the farmer, where women would undertake this work as well as the ordinary dairying, would be considerable; as it is in a great degree owing to the assistance the foreigners get from their womenkind that their produce can be sent at so low a price into England.

GENERAL MANAGEMENT.

Good dairying is as necessary as good feeding. The dairy classes at the Agricultural Shows, the instruction given at the Colleges, and at the technical education classes, have done much good; but, in view of how little many of our farmers' wives know of the improved methods of dairying, it is questionable whether the right people have yet been reached. It is plain that, if ever they are to learn, the teaching must be brought to their doors, as there are so many home duties to be performed, that to find time to attend a series of classes is with many an impossibility.

Here is an opportunity for our Squires' and Rectors' daughters. If they would take a few lessons and then impart their knowledge to their hard-worked neighbours, they would be doing really good work.

FACTORIES.

In order to make the best butter all the conditions already mentioned are indispensable, for the neglect of one may spoil the entire batch. Hence, butter made in factories is never so good as that made in private dairies, where the control of everything is under the charge of one person only.

Co-operative factories which have done much good, particularly in Ireland, may perhaps overcome the difficulties fore-shadowed above; but with factories which are conducted as purely commercial speculations the difficulties of making good butter must be great. The factory must buy as cheaply as possible, and, however well-managed the system of buying as quality may be, it will not pay the farmer to sell milk of the richest quality, because, from what I can learn, the factories do not pay a sufficiently high price for this, as compared with what they give for milk of poorer quality.

CONCLUSION.

To recover the butter trade must be a question of time, patience and perseverance, coupled with the greatest attention to all details, will eventually succeed; and if the recent Act of Parliament is properly administered, it will be the means

ng, if not of stopping, the fraudulent sales of margarine and res that have for long been going on, and of expediting, as soon as possible, a revival in the home ry.

may be thought that I have been too hard upon the general se cow, as she has for years been the stock cow of the r. Now-a-days mediocrities are useless, and to succeed in ing the best in everything is requisite. In my opinion, or the general purpose cow, the butter trade would never been lost. The attempt to make animals do double work end in failure. But there is not the slightest reason why different herds of cattle should not be kept on the same —the one for butter, the other for beef—the one would the other; as if butter were made, the separated milk l be of the greatest use in rearing the young stock, thus ially reducing the food bill.

ether right or wrong, the broad fact remains that large of money are being paid daily to the foreigner for an e that can be produced better here, and as economically. y then it is the duty of all interested in agriculture, and in elfare of the farming community, to examine this question oughly, and to assist, to the utmost of their power, any ment which has for its object the retention and circulation is country of the large sums of money which have been , long a time, and still are, going away from us.

III.—*Red Polled Cattle.* By HENRY F. EUREN.

story of the Red Polled is a record of what may be done malgamation and selection. It tells, moreover, of work was begun and has made good progress in the century is nearing its close, for the Red Polled cattle now to be in English and American show-yards could not have been lled in the home of the breed when the century opened.

SOUTH-FOLK AND NORTH-FOLK.

the days when George III. came to the throne there was a ontained area in the north-eastern part of Suffolk known ie Dairy District. This area of some twenty miles by ve was the woodland part of the county. It was the ict of the *-hams*, *-tons*, and *-ings*. Its place-names are ent testimony that it was the home of the folk, who in

the fifth century crossed over from that part of Holland which we know as Jutland. They brought to this more hospitable land, so Bede tells us, their slaves, their cattle, and all the live stock, leaving no living thing behind them in their old homeland. These English folk had between them and the sea and right away all along the Norfolk coast, settlements of seafaring people, of Norse and Danish origin, while the English were pastoral and agricultural. It is asserted that a century ago these English were still so marked in feature and speech as to be readily distinguished from the coast dwellers. The place-names confirm the assertion that the English settlements extended to parts of what we now call Norfolk. The Norse and Danish settlements, as marked by their place-names, took up nearly one-half of the eastern portion of that county. Some of these were probably anterior to the coming of the Angles or English. It is hardly likely that these Norse had much intercourse with the English folk, so different were they in race and in their ideals. This can be the only explanation of the fact that down to the beginning of this century, the two folk had cattle that were diverse in many particulars. In the early days, however, there were very few observers, and still fewer recorders of what was to be seen on every hand, so that we have to depend wholly on deduction for our history. The recorded history of native cattle, as of a good many other things, commenced when newspapers began to circulate, and men learned the value of an advertisement.

THEIR BREEDS OF CATTLE.

One John Kirby, a dweller on the border of the woodland area, travelled all over Suffolk in the years 1732, 3, and 4. Like many other travellers of that day he had no eye for live stock, but he knew what was good eating. Hence, he wrote down that the butter produced in the woodland part of Suffolk was "justly esteemed the pleasantest and best in England." He did not speak so favourably of the cheese produced in the generally dirty but very rich and fruitful woodland area, where there were some few, he said, who "made little or no butter, and made a cheese little if at all inferior to that of Stilton." In 1792, sixty years after this bit of farm history had been printed, Arthur Young, a West Suffolk man, visited the district. In his 'Survey of Suffolk' he specified the villages that bound the seat of the dairies of Suffolk," and said that in the "headquarters of the breed," the cows were "universally polled, that is, without horns. He then describes the points, as given to him by "some considerable dairymen," of the cattle for

were and "spread over the whole county"; and these points he himself had noticed in those cows "famous for their quantity of milk." In the particular of colour, he said "the best milkers have seen have either been red, brindle, or yellowish cream-coloured"—usually known as "Suffolk dun." As early as 778, 1795 and 1797, there were advertisements, in the *Norwich Mercury*, of sales of the stock of tenant farmers quitting their occupation at Michaelmas, which show that there were dairies of these polled cows also in parts of Norfolk. In 1802 no less than six of these dairies were dispersed, and in 1804, thirteen. The places of sale in these two last-named years were widely scattered. One of the advertisements, of a sale at Kimberley, in the autumn of 1802, reads thus:—"21 beautiful polled cows and a bull; as good cows as the county of Norfolk can produce." There is also on record the personal testimony of two centenarians: one tells of similar polled cattle near Elmham, where one of the auction sales was held in 1802; and the other relates how she inherited, with an estate, a herd of Red Polled cattle from a relative, who a century ago owned the Shipdham Hall lands. How came these Red Polled cattle in this comparatively small area? Youatt made a guess—and set it down as a fact—that they were descended from the pick of Galloways brought into Norfolk to fatten. He ignored the fact that these Suffolk Polled cattle had a soft skin-like skin, and were good milk yielders, while the Galloway had a rough coat and was a beef-making beast; in shape, too, the Galloway differed considerably from the Suffolk Polled. There is rather more probability in the supposition that these cattle are descendants of the hornless cattle which Herodotus says he saw in the country of the Scythians—parts of Russia, north and east of the Crimea; hornless, as he supposed, because of the cold. Polled cattle are yet to be found in Central Russia and in that part of Hungary adjacent to Russia. That they were found in Norway and also in Iceland, which was settled from Norway in the ninth century, shows that the variety went with the nomads of old days. The Angles may have brought over such cattle in the same way as did the colonists, who, going from East Anglia to Virginia, called their district Norfolk. These took over, together with trotting horses, hornless cattle, the descendants of which are spoken of to this day as "muley cattle."

In the Norse and Danish settlements of Norfolk were cattle of quite a different character from these Suffolk Polled. John Marshall, the closest and most accurate observer of 120 years ago, employed his two years' engagement as an estate agent to excellent purpose when he wrote his two volumes on 'The

Rural Economy of Norfolk,' which are a mine of information. He says he found in the North Walsham district, "a sturdy, thriving race of cattle," which he asserts was "Herefordshire breed in miniature." The favourite colour "a blood-red with a white or mottled face." Marshall speaks highly of these small boned cattle, as "fattening as freely finishing as highly at three years old as cattle do generally four or five." The flesh, he also says, was of superior quality but as he is silent in regard to the milking qualities, it is concluded that these were poor. Marshall makes it clear that, in his opinion, it only wanted selection and as much as was then given to the shorthorned and longhorned cattle to make this Norfolk variety a prime beef-making animal.

AMALGAMATION OF THE BREEDS.

In 1782, however, a few Norfolk men were striving to get after what the Americans term a "dual purpose" cow. They wanted to unite the good milk-producing qualities of the Suffolk Polled with the fattening capacity of the Norfolk "clean-horned blood-red" cattle. Marshall saw some of the produce of Suffolk bulls and Norfolk cows, and was not greatly attracted by them. He doubted whether increase of size and improvement of milk ought to be secured at the cost of the tendency to early fattening. His book was written after he had left the county, and in it he advised Norfolk husbandmen to "cross with caution, lest by mixing they adulterate, and in the end lose irretrievably the best breed of cattle, so admirably adapted to their soil, climate, and system of management." Arthur Young, a few years later, was, on the other hand, condemnatory of the old Norfolk variety, for he says one dairy of the breed, which he saw at Mileham, included cows "as loose and ill-made as bad Suffolk cows." It may well be supposed, therefore, that what I have termed the Danish area of the county had better cattle of the variety than had Mid-Norfolk—the English and poorer lands. However that may be, these years demonstrated that judgment and skill in mating animals of the two varieties were capable of giving results other than those which Marshall feared.

One of the Holkham tenants—Jonas Reeve, of Wighton—did not hold with Thomas William Coke's views respecting the possibilities of Devon cattle on the dry poor land of Norfolk, and his relative and neighbour Richard England Binham, a yeoman, farming his own estate, set themselves to work of building up a herd of cattle which should combine the merits of the Suffolk and Norfolk varieties. Possibly they were little aware of their failures, of which no doubt they had many.

ly, 1808, at the Swaffham Show of the East Norfolk Agricultural Society, Mr. Reeve gave his brother farmers an opportunity of seeing a bull of the "new kind." It was described the officially advertised record as having no horns, as being the "true Norfolk red," and as being able to "get stock that could fat to about fifty or sixty stone, with as little coarse meat could be expected." Two years later, at the Holkham Sheep Meeting, Mr. Coke, with his company of invited guests from all parts of the country, and his Devon-breeding tenants, had the opportunity of seeing how the experiment was progressing. Mr. Reeve showed his "Norfolk bull and two year old heifers." The newspaper reporter of that day, who went to Holkham to report the doings and sayings of this far-famed agricultural Congress, stated that these cattle "convinced every person who saw them to what a height of perfection breeding may be carried by care and selection." So the work went on until 1828, when Mr. Reeve retired from farming, and his cattle were dispersed. They then numbered, so says the advertisement, "Eleven matchless blood-red cows in calf, two three year old heifers in calf, eleven two year old heifers in calf, and a two year old blood-red bull, one of the most perfect animals in the kingdom." Mr. England's son, who was regarded as one of the most skilled Norfolk farmers, told me that his father's herd comprised thirty cows of "a beautiful red." He added, "I doubt if there are any better at the present time" (1873). Mr. George, farming near Norwich, in consequence of what he saw at Holkham in 1810, began a small herd of blood-red cows, buying of Mr. Reeve, and giving the then "frightful" price of twenty-five guineas for a cow bred at Foulsham—evidently a good breeder. Mr. George bred in and in for some years, because he could not meet with a bull to his liking. He held the first public sale of the variety in 1822—"twelve blood-red polled cows, and a year old polled bull." Lord Sondes, on inheriting the Elmham estate, was advised by Mr. Coke to go on with the polled cattle which he found existing there; and, in the course of years, he, too, put his energies into the development of the blood-red polled cattle. By the year 1818 the name Norfolk Polled came into use, and a careful distinction was made between them and the "Polled Derbys" and Galloways, which were so to be found in the county. On the western borders of Norfolk there were also heavy milkers of the shorthorned type of polled—"a most excellent breed," we are told. The "Polled Durham" of the present day, which are growing into favour in America, would appear to be a reversion to this once well-known type. When the County Agricultural Society was started, the Suffolk Polled were recognised; but the Norfolk

Agricultural Society kept the Devon in the forefront until 1847. Then prizes were offered for Norfolk or Suffolk Polled and thenceforward interest in the variety grew year by year.

THE NEW TYPE OF RED POLLED.

The polled character was readily fixed in the new Norfolk variety, as indeed it is when a polled beast and a horned beast are mated. How persistent the characteristic is was demonstrated in the United States when an imported Red Polled cow, served by Jersey and other horned bulls, produced year after year from 1848 polled bull calves, and these in their turn having served all sorts of horned cows, became sires of other polled cattle usually red in colour, generation after generation, for thirty years. The blood-red colour was also soon recognised as evidence of descent from the old Norfolk cattle. It was introduced by Sir E. Kerrison into the Suffolk dairy district, near Eye, by bulls bred by Mr. George; and also by Mr. Moseley, when he took his Red Polled herd from the western borderland of the two counties to Glemham, on the southern border of the Suffolk dairy district. There was, however, no general admixture of Suffolk and Norfolk Polled until the two County Societies provided the opportunity for friendly rivalry. The handsome and truest bred Red Polled thenceforward were much sought after; but it was not until the Royal Agricultural Society London Show in the year 1862 that the improved polled stock were formally recognised by the name Norfolk and Suffolk Red Polled. This was shortened twenty years later into Red Polled when the variety had extended its area to America, and had in its Herd Book well established. What John Marshall forecasted as a likely consequence of the amalgamation of the two varieties in order to improve the milk-yielding powers of Norfolk "home bred" cows, and to increase the size of the steers, followed, herds less carefully selected and bred than those of Mr. Reeve, Mr. England, Mr. George, Lord Sondes, and a few men who applied their instruction. Of many of the Norfolk "home bred" it could no longer be said that "they were short-legged, round-barreled, well-loined." They usually took after the Suffolk in being rather high on the leg, with the carcass uneven, the loin narrow, and the backbone ridged. These points were seen in an aged cow in the Elmham herd, when the work of preparation of the Herd Book was undertaken in 1873. They were the more marked since the herd contained many cows of the old Norfolk type, which in latter years had been sought for and bred up to. This cow—427 Primrose, A1—was born in the summer of 1848, and was a regular breeder until June 187

She was then used as a nurse cow until she fell into a water-hole and was drowned in the following year. She was a heavy milker, and passed on that good quality, so that the group signature—A1—has become a recognised pledge of a good dairy cow. Probably, the commonly received notion that a wedge-like form must needs go with dairy qualities had its weight with most breeders. There were, however, a few men who held to other views. Their ideal was the old Norfolk form, combined with the polled character and prime dairy qualities. Fifty years ago, two Norfolk tenant-farmers tried to realise the ideal. Of these, B. Pond, of Dunham, did not survive to see its full recognition; but his good labours are yet manifest. The other, Nicholas Powell, of Snoring, near Fakenham, during forty years used his high skill in mating and selecting. As a result, Red Polled cattle of his breeding were, twenty-five years ago, recognised as the highest type of dual purpose cattle, proving themselves good both as milkers and as beef producers, while in the show-yard they were invincible. By the use of Red Polled blood of Powell stock ("P" followed by the numbers 1, 2, 3, 4, &c.)—group signature animals whose individual characters had been fixed in a remarkable degree—there has been brought about a uniformity of type to which John Marshall's description of the old Norfolk variety may be truthfully applied, save that they are polled rather than horned. His description, slightly amended, may now be taken as accurate, namely—a small, hardy, thriving race, fattening freely and finishing highly; small-boned, short-legged, round-barreled, well-loined, well-filled thighs, clean chapped; the head fine and fawn-like; colour blood-red. An inheritance from the Suffolk, in addition to the polled character, will be found in the remarkably large milk veins, rising in knotted puffs. Arthur Young says this character was so general that he scarcely ever saw a famous Suffolk Polled milker that did not possess it. On the other hand, while the Suffolk Polled had a large udder, loose and creased when empty, very many of the present-day Red Polled have a comparatively small udder, but well shaped, the milk holding up in the knotted veins. This shows that what used to be considered the beef-producing form is found in this instance in the milker, just as it is in that other more famous dual purpose variety the Shorthorned.

SELECTION.

A well planned Herd Book is essential as a means for selection as well as of registry. As no breeder was found willing to take the risk and responsibility of starting the Herd Book that

had been suggested many years before, in 1873 I volunteered for the work. As a preliminary the then chief breeders and exhibitors met together to agree on a "Standard Description." I was so fortunate as to have the counsel of the Rev. George Gilbert, a man deep in the lore of Shorthorns, and, with him, examined every British Herd Book then published. We resolved on grouping the existing Red Polled cows either under the names of breeders or by geographical areas. Hence there are group letters and numbers, which tell at a glance from what foundation cow, of a certain herd or district, every animal in the Herd Book has descended on the dam's side. The most noteworthy consequence of this arrangement was not anticipated by us. It has enabled breeders to note rapidly and accurately which of the families breed stock that will give the best results. In this way there has been a self-acting process of selection going on since 1874, when the first volume of the Herd Book was issued. Thus it has come about that half the families recorded in the early volumes of the Herd Book are no longer represented by cows sent to the Society for registration: they were tried but found wanting in one or more of the desired qualities, and thenceforward were counted among the cattle whose registry need not be maintained. The fact that the Herd Book was from 1874 to 1887—seven issues making four volumes—my own personal property enabled me to lay down the condition that, after the second issue in 1877, there should be proof of twenty years' Red Polled inheritance, or four generations of Red Polled blood, in new candidates for registration thus preventing the introduction of Shorthorn or other crosses which, owing to the prepotency of Red Polled blood, closely imitated the pure-bred animal. A section was opened for "Probationers," in which improved stock might find a place until their four generations could be recorded. A few worthy animals are in this way working their way up; but the owners of unregistered polled stock appear to find it more pleasurable to work with animals that are fully registered. When the breeders, in 1888, formed themselves into a Society, and were duly incorporated, they had thus a clearly defined plan of registration and to this plan the Society has adhered.

CONSEQUENCES.

The Society also soon recognised the value of recording the milk yields of Red Polled cows. The Council made a regulation that any record, sent in for publication at the Society, must in the Herd Book, should show the milk yield of all the cows in the herd. In the spring of 1899, the Council of the

Society took yet another new departure, formulating conditions under which Red Polled cows as dairy cattle should henceforth be judged. These conditions provide for a daily morning and evening record of the competing cow, taken under normal conditions, and that its accuracy be tested by independent inspection. They also provide for pail and butter-fat tests in the show-yard, and for the judging there of the cow by quality and appearance as a dual-purpose cow. One-third of a specified number of points is allotted to milk, a third to butter-fat, and a third to quality. How this novelty in dairy cattle-judging works will be shown in that part of this article which deals with some of the results of daily recording of milk. That has been going on in one large herd since February 4th, 1887, and it is now becoming general, for the first question an intending buyer asks relates to the milk yield not only of the young cow but of its dam, and of its sire's dam.

THE RED POLLED FOR THE DAIRY. ;

The dual-purpose cow must be able to give a fairly good account of herself in the dairy, and be able to produce calves which, when steered, will grow well and fatten into good butcher's beasts. How does the Red Polled meet these requirements? Not many years have passed since the striving after these two conditions began, by steadily recording results and applying their teaching. Enough has, however, been done to warrant the hope that a satisfactory answer can be given to the question. Red Polled cows are now being put to the test, not only in East Anglia, but also in counties much more favourably situated for growth of grasses and clovers, and with atmospheric conditions better adapted for successful dairying. In America, under most diverse conditions, a similar trial is being made, and on a much larger scale than is possible in Great Britain, for in the United States there has been a general recognition of the classification of cattle into beef breeds, dairy breeds, and dual-purpose breeds. I will give a few illustrations, selected from a mass of statistics, such as are not available in Great Britain, for any other breed of cattle viewed by whole herds.

The 255 cows which had had more than one live calf, whose records were published in the last issue of the 'Herd Book,' showed an average milk-yield of 6,494 lbs. Nine gave a total of over 10,000 lbs. (1,000 gallons) each. In 41 instances the returns ranged from 8,000 to 10,000 lbs., and in 81 from 6,000 lbs. to 8,000 lbs. As 6,000 lbs. admittedly shows a good milker, there were thus 131 cows out of a total of 255, which

in this one year deserved to be classed as good. Many of these had in previous years made equally satisfactory returns.

The largest herd, Mr. Garrett Taylor's, at Whitlingham near Norwich, has at all times over a hundred cows in milk and it is thus a good standard herd in regard to milk production. The milk is retailed in Norwich, and butter is made only with a portion of Sunday's yield, so that the records of the herd are valuable as a Red Polled milk test. The reputation of the herd, originally well chosen, and since greatly improved by judgment in selection, has the attendant disadvantage that many of the best young cows, as soon as they have demonstrated their merits at the pail, are sold to home or American breeders. Yet the average of the whole herd's milk production has steadily increased from 5605·72 lbs. in 1892, to 6473·72 lbs. in 1898. There are in the herd cows whose average for six years ranges between 7,000 lbs. and 9,300 lbs. Large quantities of sewage-grown rye-grass have in successive years been raised on the farm, and a record has been kept and published of grass-feed milk returns, during the twenty-six weeks from the beginning of April to the end of September, of every cow that has dropped a calf in the first three months of the year. The return of the eight cows, which calved down in March last, showed an average of 5430·43 lbs. Lord Rothschild's herd of Red Polled at Tring Park, where there is also a herd of Jerseys and one of Shorthorns, all alike kept for the supply of milk, proves the advantages of good pasture. The cattle were originally selected, some four or five years ago, for their proven milk inheritance. In the fifty-three weeks included in the return published for 1898-9, the 36 Red Polled cows averaged 7033·45 lbs., as compared with the Shorthorns' average of 7396·95 lbs., and the 37 Jerseys' 6480·08 lbs. The most noteworthy of the Suffolk returns for herds kept for milk supply, Mr. A. J. Smith's, demonstrate the different results from feeding on land that is good and from feeding on land that is poor. While his Rendlesham herd in 1897-8 gave an average of 7069·23 lbs., his Eyke herd, only a couple of miles away, comprising cows of the same families as those at Rendlesham, averaged only 5748·42 lbs.

The oldest Red Polled herd, that at Necton Hall, near Swaffham, Norfolk, which had a first prize winner at the Royal Agricultural Society's Norwich Show more than fifty years ago, is devoted to butter-making. Mr. R. Harvey Mason, its owner, has a systematic testing of the milk for the butter-fat contained in it, using the Babcock apparatus. In the published return for the year 1898, when there was a herd of 43 cows, and of these 14 then produced a first calf, the butter-fat total, 1

monthly test, worked out just over 8,734 lbs., actually made, 8,780½ lbs. The average per cow, including the heifers above mentioned, was 203·12 lbs. of butter-fat, produced at a cost of 9l. 4s. 1d. per head, all allowance being made for value of grass, roots, and chaffed hay and straw. Of the matured cows, the best gave 369·82 lbs. of butter-fat—4·41 lbs. to each 100 lbs. of milk; and another gave 388·37 lbs. of butter-fat—4·08 lbs. to each 100 lbs. of milk; while a heifer which milked 365 days after her first calf, and gave 10,396 lbs. of milk, had to her credit 353·79 lbs. of butter-fat. A herd at Saham Toney, a few miles from Necton, is also chiefly devoted to butter-making. Its butter ratio in 1898 was 24·3 lbs. of milk to produce one pound of marketable butter. This herd of Mr. G. F. Newton's is the most instructive of all those reported on; its annual returns showing, step by step, how a young farmer has gone to work to make dairying profitable. He began in the autumn of 1893, with two in-calf heifers, whose milk inheritance was good, and whose quality was satisfactory. They have proved to be capable of giving from 7,000 to 9,300 lbs. of milk each year, and in after years, by a wise selection of the bulls used, the heifers produced have done as well as their dams. This therefore demonstrates that attention to the best means of feeding and dairying, cannot fail to be remunerative.

PROLONGED MILK-YIELDS.

The returns show prolonged milk-yielding, rather than a heavy flush of milk followed by a long time of dryness. The evidence as to this is most significant. In 1898, 173 records of 300 days and over of milk-yielding were made. It is not an uncommon circumstance that a cow in full vigour has no dry period between two calvings, or at the most a few days. On the other hand, some cows, though not many, have acquired the habit of continuous milk-yield for two years or even more, but then they require a resting time of three to six months. In that milk-yielding period a big total is run up. A cow in the Whitlingham herd—1513 Fillpail, R 11—was introduced into the herd in 1888, being just then eight years old, and having produced her sixth calf. In the following nine years she had added six calves to the herd. After the twelfth calf, dropped on August 14th, 1897, she went on milk-yielding to September 7th, 1899. Her total yield in the eleven years and four months amounted to 82,517½ lbs., averaging 7,281 lbs. per annum. She is now in her twentieth year, and bids fair to be of use for some time longer. Most of her produce have been heifer calves, and all have inherited her merits in milk production.

One of these heifers, after dropping her first calf, milked 6,496½ lbs. in 272 days, and was then sold; her total yield was 6,496½ lbs. Another, after her first calf, gave 6,496½ lbs. in 272 days. The inheritance of prolonged milk-yielding is one of the points in the Red Polled which has been cultivated with much advantage and success. The breeders have, moreover, accumulated evidence to prove that the inheritance must be studied in the breeding of the bull as well as in that of the dam. Hence the particular care that is now exercised in the choice of the bull.

A remarkable and unprecedented milk record, just completed in the Whitlingham herd, strengthens this view. A cow named 2728 Crocus, O 11—born in December, 1884, was sired by a son of an Elmham-bred heavy milker. This cow ended her career by winning the breed cup at the Norfolk and Norwich Christmas Fat Stock Show as the best Red Polled of the year. The dam of Crocus was a cow bred in the Suffolk dairy district, and of the best Suffolk blood, as it was some twenty-five years ago. Crocus's milk-yield after dropping her first calf was 11,178½ lbs. in 509 days: then after an interval of twenty-one days she produced her second calf, and gave 11,450½ lbs. of milk in 394 days. After three weeks she dropped her third calf, May 11th 1890, and was thenceforth incapable of breeding. From that date to September 28th, 1899—a period of nine years and four months—she was a continuous milker, giving a total of 50,427½ lbs. of milk, with a butter-fat percentage of 4·3 during the last five years. Her weight just before she was killed was 10 cwt. 1 qr. 11 lbs., though she came direct off grass-feed.

SHOW-YARD DAIRYING CONDITIONS.

There is a tendency in many Red Polled cows to hold up their milk when they have been removed out of their regular country. This has often been seen in cows sent by rail, for competition at the Shows of the British Dairy Farmers' Association, and of the Royal Agricultural Society of England. The new conditions set up in the nervous system have not infrequently diminished the milk-yield in the following months, so that breeders have become shy of running the risk. This accounts for the non-appearance in public milking trials of many Red Polled cows which have proved their worth at home. At the 1899 Dairy Show, the abnormal condition of the cow to which was awarded the breed silver medal for butter-yield was shown in the great difference between the morning (2·26) and evening (4·26) percentage of fat. Similar differences were again recorded at the 1899 Dairy Show. The Red Polled cow which was placed first by inspection, second in

EUREN on Red Polled Cattle.

ing trial, and was a medal winner in the butter test, 17.5 lbs. at the first morning trial, 25.5 lbs. at the first evening trial, 27.4 lbs. at the first morning trial, 24.7 lbs. at the first evening trial; and while the morning fat percentage was only 2.5, the evening was 5.45—an altogether abnormal result, telling in tale as to the nervous condition of the cow. At the Norfolk Show Dairy competition, in June, 1899, a cow whose daily average in the herd for thirty days had been 66 lbs., when milked on the show ground in the evening after arrival, and in the presence of the judge, gave only 19.4 lbs. of milk; next day she gave 38½ lbs., and as her average fat percentage was 4.2 and her looks were good she carried off the prize in the competition. The first prize winner whose average had been 66.33 lbs., and which on the day of the trial gave a total of 59½ lbs., on the preceding evening only 19½ lbs. A like abnormal state was found in most of the cows competing. This may be held to be fair warra-nted by the continued trial of the Red Polled Society's novel cow. The judge had an expert's knowledge of the Red Polled cow, as by his early training and family tradition he knew the cow northorned well. In his official report he says of the cow that many Red Polled cows have of withholding the milk for one or two milkings after being moved to a strange place.—“This actually happened to No. 376 in the class. She gave only 4½ lbs. of milk the evening before the show. The judge asked her and found that she was not milked out, but only gave the milk. Next day morning (first day of the show) she gave 14½ lbs. of milk; in the afternoon 23½ lbs.; and the next day morning 16 lbs. The butter fat in the morning (14½ lbs.) was 1.20 per cent., and in the afternoon (23½ lbs.) 7.20 per cent., the average being 4.20 per cent. On my own information, I tested her milk again on Thursday morning when it came out 4.60 per cent. butter-fat.” Ernest Mathews, who judged in the competition at the Norfolk Show, directed attention to the comparatively low percentage of fat in the milk of some of the competing cows, which is receiving the earnest attention of breeders. By the careful selection of bulls they have largely increased the average, so they anticipate they may improve the quality of milk. Attention to that detail.

THE RED POLLED FOR BEEF-PRODUCTION.

It is worthy statistics whereby to estimate the value of the Red Polled as a beef producer—which is as important in a dual purpose cow, the dam of calves that have to be steered, as

her capability of milk and butter production—have been able only through the published live stock weights of comparative cattle at the Smithfield Club Show and at the Norfolk and Norwich Christmas Show. By a comparison of the live weights of steers that have been shown for two years in succession the capacity of the Red Polled to lay on flesh may be adequately judged. Increase in live weight by the year's feeding of a Red Polled steer has ranged as high as 52·6 per cent. on officially recorded weight twelve months before. A steer, produce of a heavy milking cow, weighed at 17½ months 1,238 lbs.; a year after, in 1894, when he was breed winner at Norwich and first in London, his live weight was 1,735 lbs.—gain 495 lbs., percentage 40·14. By another year's feed he gained 421 lbs.: on the two years' feeding 918 lbs., percentage 74·14. His twin sister, reserve for the breed both at Norwich and London, weighed at thirty months 1,452 lbs. Their dam gave in that year 14,184 lbs. of milk. The London cup winner in 1892 had a live weight at 17½ months of 1,208 lbs.; at the 1893 Shows he weighed 1,656 lbs.—gain 448 lbs., 37·09 per cent. At the 1896 Show a 32 months old heifer won the Smithfield breed cup, her live weight being 1,562 lbs. The reserve was the Norwich breed winner, a 30 months old heifer, whose live weight was 1,452 lbs. The Duke of York's breed cup London winner in 1891 weighed 1,684 lbs.—gain 470 lbs., percentage 38·71; another Red Polled heifer had then a live weight of 1,629 lbs. at 30½ months. The best Red Polled at the 1898 London Show had put on 582 lbs. during the year—44·83 per cent.; while the winning Red Polled heifer had a live weight of 1,660 lbs. at 30½ months. Both in 1897 and 1898 the Smithfield champion was an Aberdeen Angus heifer; that of 1897 weighed 1,729 lbs. at 33 months, and that of 1898 1,760 lbs. at 30½ months. These figures are quoted merely for information as to the beef-producing powers; nobody would suggest that there could be any other comparison between the Red Polled and these models of beef-producing form.

A RED POLLED FEEDING EXPERIMENT.

A feeding experiment conducted at Whitlingham by Mr. Arthur Taylor, for the Norfolk Chamber of Agriculture, during the winter of 1897–8, furnishes some statistics for estimating the worth of Red Polled steers, such as are bred and fed as part of ordinary farm work. Twenty steers of from 16 months to 18 months old, which had been summered on grass, were bought of the breeder. Trials, extending over 158 days, were made

linseed cake, cotton cake, and dried grains. Of the five animals fed on linseed the best made a gain of 2·363 lbs. per day, and the total increase of the five was 1,537 lbs., or nearly 2 lbs. per head per day. The steers sold at 8s. per stone dead weight, live weight 54½ cwt., carcase weight 253 stone 3 lbs. Each of the other lots of five had a carcase weight of from 239 to 240 stone. The records demonstrated that an 18 months old Red Polled steer grows on until he is about two years and then he may be readily brought into prime condition. The fact that fattened stock make as much per stone as is given for prime carcasses of any breed is the best proof of the quality of the flesh of the Red Polled.

THE RED POLLED BULL FOR CROSSING.

Americans are using Red Polled bulls largely for crossing purposes, they having proved that such a bull used on a Shorthorn, Hereford, or even on a Jersey or Guernsey cow, will get good fat cattle, almost all hornless, and paying well for their food. Both the Shorthorn and the Hereford cross have been shown at Norwich. A steer of the Shorthorn cross weighed there, at 14 months, 17 cwt., 1 qr., 19 lbs. (1,951 lbs.), and had gained during the year 486 lbs. live weight—percentage 33·08. Eighteen steers, similarly bred and fed at a Shaker Community's farm in Ohio, were put up to fatten when two years old; they made an average gain of 702 lbs., with a consumption of 50 bushels of maize per head, while thirty-five Shorthorns of a corresponding age gained an average of 600 lbs. with a consumption of 85 bushels of maize per head. All the fifty-three fattened steers were sold to the same buyer for shipment to England. The thirty-five Shorthorns then averaged 1,540 lbs., the eighteen Red Polled cross averaged 1,492 lbs.; the Shorthorns sold at 4 cents. per pound live weight, the Red Polled cross at 4½ cents. Dr. Slingerland, the Community's Director, who reported the results, had previously made trials of other breeds, and he asserted that "the Red Polled cross gave the best results for corn consumed." The money difference in the cost of the maize consumed was 1*l.* 14*s.* 5½*d.* The money value of the gain per head on the Shorthorn (calculated on the sale price) was 5*l.*, and on the Red Polled cross 6*l.* 4*s.* 4½*d.*

FEEDING FOR MILK AND BUTTER.

In ordinary feeding of Red Polled cows, as breeding and dairy stock, it must not be forgotten that there is a very great difference between their natural condition in East Anglia and those conditions which would be found in most other parts of

England. At Necton the ration from January 1st to May 13th is 10 bushels of roots and $3\frac{1}{2}$ stone of hay and straw chaff; from May 14th to September 23rd the cows are on grass; from September 24th to December 31st they have roots, hay and straw chaff, as above, with oats, maize-germ, and bran. In the Saham Toney herd the winter ration is 20 lbs. pulped roots, 12 lbs. pea straw or corn chaff, 2 lbs. peas, 2 lbs. boiled maize or barley, with 8 lbs. cake and corn for those in full profit: the total ration weighs 60 lbs. From August 14th to October 1st they have 2 lbs. corn meal, thenceforward 6 lbs. linseed-cake. At Whitlingham the cows are kept in sheds during the winter for from 24 to 28 weeks, according to the season, i.e., from about the beginning of October to about the end of March. They are kept wholly on grass from 24 to 28 weeks, according to the season. When in full profit, and not at grass, each cow receives 4 lbs. dried grains, 2 lbs. decorticated cotton-cake, 1 lb. malt, and 3 bushels of roots and chaff mixed. As the cow's milk decreases in quantity the artificial food is gradually diminished and is entirely dropped when the milk amounts to only 10 lbs. per day. It will be seen, therefore, that the ration in each case fairly satisfies the conditions laid down by science in regard to a sufficiency of protein (nitrogenous foods) for repairing the natural body waste, and also for ensuring a good yield of milk.

IV.—*The Story of a Grass Farm on Clay.*

By C. MORGAN-RICHARDSON.

It will probably be admitted that on the western side of these islands the chief crop of the country is grass, that it is of all crops the most generally neglected, and that the produce of our grass lands might, by a comparatively small outlay, and judicious management, be doubled, or even trebled, in value. It is not at all an uncommon thing to find on a farm where the arable land is kept in a high state of cultivation and fertility, that all the manure is carried year after year to the ploughed land, the meadows and pastures being allowed to take care of themselves. In such cases, the farmer scorns the idea of exhaustion, believing that the grazing land will maintain its fertility in some marvellous way from the droppings of the animals that feed upon it, and that the loss to the hay land is more than compensated for by the application at long intervals of the scrapings from the bed of the farmyard pond. Such a man, when his fields are overstocked, will rent grass land at a distance from his homestead for the extra mouths, with all the

and cost of such a taking, when by spending half that rent on an artificial dressing of his own fields, he might have kept all his animals at home. And it is to such men, and particularly to those who farm a cold clay soil, that I dedicate this with the permission of the Editor of this "Journal"—the facts which tell of my own experience.

I do not pretend to have discovered anything new in the management of grass land. I have merely put into practice the advice of others, which I have derived mainly from the articles of the late Sir H. M. Thompson in the "Journal" of the Royal Agricultural Society, and the letters of Mr. Maurice de Laune which from time to time have appeared in the "Field" newspaper. Nor do I argue that the treatment which has been successful in the case of my own land is one for general adoption. Soils and climates differ widely, and treatment must be varied accordingly. Just as every man is said to be in the management of his own health, and the knowledge of his own constitution, either a fool or a physician at forty years of age, so should the tenant, who has been five years or more in occupation of his farm, be a fool or a physician with respect to its treatment. It would be just as absurd to offer one infallible medicine to suit all constitutions, as one infallible method of treatment for all soils. But I think it is quite possible for any man who farms cold clay land in a moist climate to treble its renting value, and to convert it permanently into good feeding pasture, by adopting the system of treatment which has been so successful in my own case, and by an outlay, too, well within the reach of an ordinary tenant farmer.

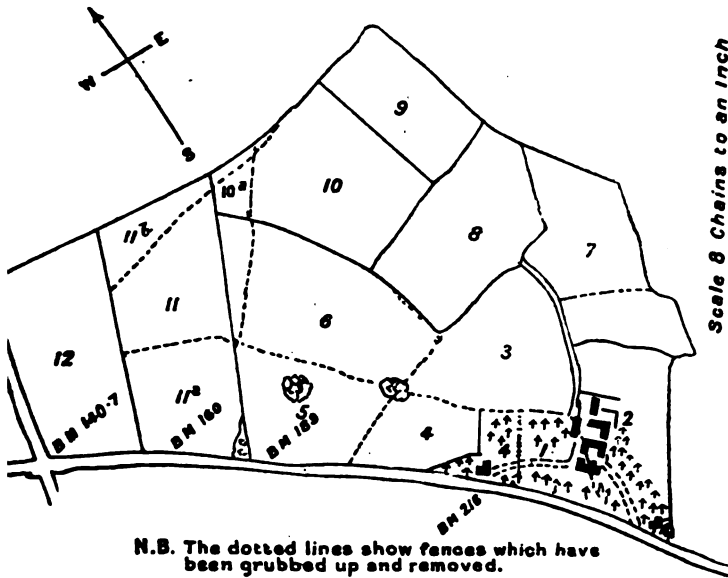
Some attention was called to the results on my own farm in correspondence which appeared in the columns of the "Field" about a year ago. Mr. Joseph Darby had been commissioned by the Editor of the "Live Stock Journal" to write a report upon my herd of Shorthorns. I was not aware at the time that Mr. Darby writes in the "Field" over the well-known *nom de plume* "Agricola," and as he appeared to be much struck with the appearance of my grass fields, I gave him an outline of their history. A fortnight afterwards an article appeared on the subject in the "Field," under the title 'Reclamations and Improvements of Pasture in South Wales,' and a great deal was said by the writer of the contrast which existed between my fields and the unimproved lands in the West of England. "Agricola" wrote:

"On arriving at Noyadd-wilym, near Cardigan, where I tarried to inspect the well-known herd of Shorthorns belonging to Mr. C. Morgan-Richardson, I found them veritably grazing in clover, for *Trifolium repens* formed the

abundant an undergrowth to luxuriant meadow grasses everywhere, that I felt inclined to ask the owner whether his was the land of Goshen, or, if not, by what magic he had made his feeding-grounds so very first-class—better, in fact, than any I had previously seen in that part of the kingdom.”

The article suggested much correspondence, and inquiries poured in upon me from all parts of the kingdom for an explanation of the process which had created, as “Agricola” termed it, a land of Goshen, and it resulted, too, in the request for the story of my experience for insertion in this ‘Journal.’

To tell my story properly, which, by the way, is like the story of Canning’s Knife Grinder, in that it is no story at all, should begin at the beginning, and explain when and how I entered my farm. The plan below shows all the land which has been in my occupation. I entered in the month of August, 1879, when I arranged for the purchase of the leasehold interest on the enclosures, Nos. 1 to 11 on the plan containing in all 58 a. 3 r. 28 p., and which were then held together and known as the farm of Noyadd-wilym. At the time of buying this lease I had no intention of farming the land, but the house suited me for other reasons, and I took the land with it, because the lessee could not, or would not, divide the holding. It was in a wretched state of cultivation. My predecessor had kept a dairy herd of ten cows, and on the day he gave up possession I recollect his telling me that the farm had almost ruined him, and that the soil was such “as would starve a crow.” It had been run out by one farmer after the other, and my neighbours can recollect a crop of barley which was reaped in what is now my best field, and yielded only 4 bushels an acre! The hay-ricks on the farm, at the time I entered, included all the hay made in the year 1878, and their size and value may be guessed by the fact that, although of good quality, they did not realise altogether more than 20%. The enclosures, Nos. 3, 5, and 11 on the plan, were under corn and the rest had been for many years in pasture. The grazing lands were starved, and the fields were full of moss, with that blue colour over the whole which tells of carnation grass. The brambles grew out from the fences, and tufts of rushes and clumps of gorse gave variety in the open. The so-called meadows showed a head of Yorkshire fog, knap-weed, and crested dogs-tail grass, with an undergrowth of daisies, buttercups, and plantain. Their productiveness may be judged from the fact that in the case of one of the best fields the neighbour who had taken the contract for mowing at 2s. an acre, stopped his horses at the gate because he did not care to “put me to the unnecessary expense of cutting the field.” The scantiness was not due to close grazing, for my predecessor had sold off a



No. on Plan.	Description.	Acreage.		
		a.	r.	p.
1	House, garden, &c.	2	0	20
2 & 4	Grounds, &c., added since occupation	4	0	0
2	Field, remainder of	3	3	8
3	Field	5	2	6
4	Field, remainder of	2	2	10
5	Field	4	0	24
6	"	6	0	24
7	"	6	0	32
8	"	6	0	0
9	"	3	3	0
10	"	7	0	16
11	"	4	2	8
11A	"	3	0	0
		58	3	28
Deduct for No. 9, sold		3	3	0
		55	0	28
Add for fields purchased in 1884—		a.	r.	p.
10A	Part of field	0	2	0
11B	"	1	1	30
12	Field	6	2	4
		8	1	34
		63	2	22

his stock the previous Michaelmas, and not a hoof had been over his land since that time. Nor was the field itself to blame, for I am certain that during the last twelve or thirteen years I have never, except in the dry season of 1893, mown less than two tons an acre from it. There was no proof or bottom in the grass. In my first year's occupation I found it difficult to satisfy the appetites of my entire stock of eleven horned beasts, bought in to eat the grass and lattermath. Last year, after nineteen years' occupation, I found it a simpler matter to keep on the same extent of ground 18 Shorthorn cows, a bull, 14 young beasts of all ages, 8 horses and ponies, and 16 breeding ewes, all in thriving condition, and then to have an ample reserve of grass for autumn and winter use.

The farm faces N.W., and is at an elevation of 200 feet above the level of the sea. It is about five miles from the coast, and is so exposed to the fury of the Atlantic winds that it is almost impossible to grow trees upon it. The soil is a heavy clay, varying in colour as well as in consistency, but with a narrow belt of sand running underneath the house, and through part of the enclosures Nos. 2, 7, and 8. The average rainfall of the neighbourhood is about 45 inches.

In the year 1880 I bought the farm, and soon afterwards sold the enclosure No. 9 of nearly 4 acres to a neighbour. The enclosures Nos. 10A, 11B, and 12, containing about $8\frac{1}{2}$ acres, were bought and added to the farm in the year 1884. In the meantime I had taken in about 4 acres from Nos. 2 and 4 for gardens and buildings, and I therefore calculate that I have now about $57\frac{1}{2}$ acres in all of farming land, or just about as much as the farm contained when I entered it.

For the first two or three years of my occupation I made no great attempt to improve my grass land. I put in drains in part of Nos. 4 and 5, and cleared the gorse. I laid down the field No. 11A with a simple mixture of rye-grass and clover, which came up and flourished for many years, side by side with the couch. But in 1883 I started a small herd of Shorthorns, and I soon realised that I should either have to improve the land or give up well-bred cattle. I found that I could only keep the cows in fair condition, and get an ordinary flow of milk by heavy allowances of cotton-cake, and that the young stock went back as soon as they were turned on the grass, unless they had a liberal feed of linseed-cake and meal. It was about this time that my attention was called to the articles by Sir H. M. Thompson and Mr. de Laune, to which I have already referred. I decided to lay down all my land to grass, with the exception of one field only, which I retained for roots (No. 7), to be grown in different parts of that field in rotation. I also

ned to dress every field in its turn with artificial

I had noticed that the cattle grazed reluctantly on lands recently dressed with farmyard manure, and on the lands dressed with artificial manure, and I, therefore, to try these dressings in alternate years. Rotation seemed to make the rankest grass palatable in m of hay, and I made it a fixed rule, therefore, to graze my lands every other year, applying all the farmyard manure to the land I intended to mow, and giving the rest of phosphatic manure to the rest. I have continued this process up to the present time, and have never any reason to regret my decision. I concluded from experiments which I made that my land did not require potash, because it was available in sufficient quantities in the soil itself, or because I was supplying it in the dressings every other year from the farmyard mixen. But I was told that my land required superphosphate, and I gave, and to my advantage of giving, about $3\frac{1}{2}$ cwt. an acre to all the land, applying it in the first or second week of

Sometimes the farmyard manure did not cover all the land, and I tried to make matters equal in that case by dressing in February or March of 3 cwt. superphosphate, sometimes with and sometimes without 2 cwt. kainit, and in April by nearly 1 cwt. of nitrate of soda an acre. I have seen the first improvement of my grass land from the time I began to use cotton-cake to support my Shorthorn cattle, but the season in which I commenced the "alternate-cutting-dressing-system" the progress has been more marked, and it continues now from year to year. I have during the last six years used basic slag instead of superphosphate, applying it in November or December, but I am not yet quite equal as to their comparative values. My land is of the kind which is generally benefited by lime, whether applied in the ordinary way, or in the form of basic slag, and I considered that in the latter the advantage of furnishing at the same time the necessary constituents of lime and phosphoric acid. But I am nevertheless, of opinion that at equal prices the superphosphate would give me the best results, and one of the most successful dressings I have ever tried was from a cargo of English Dissolved Bone Superphosphate wrecked on the coast and sold as damaged stuff at the low rate of 1*l*. per ton. It showed a pattern on the grass fields as in a carpet, and it was visible throughout the whole summer to mark its boundary. I have heard it suggested that basic slag is an exhausture. But that can hardly be the reason for its inferiority to superphosphate in a case like mine, seeing that my land is dressed every other year by fresh material from the farmyard.

The field, Nos. 3, 4, 5, 6, was at one time my worst field, and is now the best. At the time of my entering it consisted of four small fields, the fences being shown in dotted lines on the plan, but I grubbed these up, and converted it into one comparatively large field of 17 acres. One part, containing about six acres, No. 6 on the plan, showed a fair bottom of rough coarse grass, and I decided that I would not interfere with it but trust to the effect of manure to change the character of the herbage. A small corner at the bottom was set apart and railed in, to be left unmanured as an object lesson to show the difference between the lands in their improved and unimproved state. The other three enclosures were laid down without a corn crop in the month of August in 1883, and with the following mixture supplied by Messrs Webb and sent in separate bags:—

Webb's Perennial Rye-grass	9
Cocksfoot	4
Timothy	2
Dutch Clover	7
Cow-grass	2
Meadow Foxtail	2

It was hand-weeded for thistles in the Autumn, and again in the following Spring, and cut for hay the same year. Since that time it has been continuously dressed on the alternate system of farmyard and phosphatic manuring, and it now carries a close and luxuriant herbage. I regret that the mixture did not contain some of the fescues or a larger proportion of cocksfoot. For that reason, it was some time before I could secure a good bottom, and useless weeds took advantage of the spaces left for them; but constant manuring here and elsewhere has induced a growth of rye-grass. I consider 1894, on account of the preceding dry and grassless seasons having left less of an accumulated stock of fertility in the ground, my record year. In that year the Foxtail was in full flower early in April, and I mowed on this field a crop very nearly equal to 4 tons an acre.

In 1893 I laid down No. 7, which had then been for ten years under a root crop. I sowed it with a corn crop in the Spring, but, owing to the dry season of 1893, much of the seed failed, and it is only now that the field is growing a sward. The mixture in this case was:—

Webb's Perennial Rye-grass	7
Cocksfoot	7
Timothy	4
Dutch Clover	7
Cow-grass	2
Meadow Foxtail	4

o that the preponderating grasses are Cocksfoot and Timothy. The former showed grandly the first season, but, judging from the later hay crop, it has either almost disappeared, or by reason of its later flowering is not in evidence. I repeated in this case what I now conceive to be the mistake of sowing too small a quantity of rye-grass, and I have since attempted to remedy it, and with partial success, by an application of about 4 lbs. an acre on the surface after a Spring harrowing.

I have long discontinued the practice of feeding my stock upon the fields, except in the case of steers intended for the butcher, and the difficulty I now have is not to keep up the condition of my animals but to keep it down, so that they may be fit for breeding. The farmyard manure continues to be of high value, because I am obliged to consume every year a quantity of corn and cake for the young bulls reared for sale, and I make almost enough each season to cover the land reserved for mowing. I have also used from time to time, and with much benefit to the heavy clay land, the coal and culm ashes, which I can buy at a reasonable price in the neighbouring town of Cardigan.

I have a great belief in the early mowing of land. Mowing is too often deferred until the grass has lost its sweetness and succulence, and then the land underneath suffers in consequence of the delay. When mown late the extra quantity gained is at the expense of quality, and there is a resulting deficiency in the lattermath.

I graze my pastures heavily, first with cattle, then with horses and sheep, and as soon as the top is taken off I like to have the chain-harrow run over them to spread the droppings as well as the mole-heaps. This I do two or three times in the course of the summer, and in July, when some of the grasses will, in spite of the stock—and the survivors I observe are generally the inferior grasses like the *Holcus lanatus*—throw up their spikes and prepare to seed, the mowing machine goes over the ground to lay them low with the thistles. After this mowing, as after each chain-harrowing, the fields are shut up, and there comes a new, fresh, clean growth like lattermath. Of course the mowing machine is set high, so that the roots are not left bare to the rays of the summer sun. This plan, I find, results in an even pasture without tufts, and with fewer—I wish I could say with no—thistles.

I have not much faith in renovating mixtures, nor can I understand how a light blow-away seed like Meadow Foxtail could possibly find its way through matted turf to the soil below and, germinating there, conquer its established rivals

in the struggle to reach the air and light above. I can imagine that the comparatively heavy little clover-seed may find its way down under favourable circumstances, and I have once been fairly successful in adding to the clover plant of a field by sowing on a very thin and much-harrowed pasture, and afterwards applying a good dose of phosphatic manure. For my own part, I believe more in the effect of the manure dressing than in the new seed, and have again and again been astonished by the almost miraculous growth of clover after an application of superphosphate or basic slag, or of rye-grass after a sprinkling of nitrate of soda.

There are still a few people in the world who look with suspicion on the practice of using artificial manure. They talk of over stimulation, forgetting or not knowing that to add nitrogen, phosphoric acid, or potassium in this way is merely a simple plan of restoring to the soil the constituents which the crop takes out of it, and, moreover, that the bigger crops which result from their use mean bigger manure heaps to go back to the land on which the corn or hay is grown. It is impossible, therefore, that the fee simple value of the land can suffer from a system which raises its condition and increases its growing capacity.

In conclusion, I repeat that I do not pretend to teach anything; I merely relate my own experience which has, I believe, resulted in raising the renting value of my land two or three times over. And in support of the contention that the system adopted has improved my land to this extent, I allow me to quote from a letter written by a neighbouring landowner, Mr. Brigstocke, of Blaenpant—himself an expert on the subject of grass land—to the 'Field' newspaper in the month of October, 1898:—

"Allow me to confirm all that my friend, Mr. Morgan-Richardson, has stated with reference to the improvement of the pastures at Noyadd-wily. I have known the land even longer than he has, and, writing with so much practical knowledge of the value of land in the counties of Carmarthenshire, Pembrokeshire, and Cardigan, I unhesitatingly say that no tenant could, what Mr. Morgan-Richardson took it, have given profitably more than 13s. to 14s. an acre. Now the land for mere agricultural purposes is well worth from 32s. to 35s. an acre; but when its proximity to Cardigan is considered, and its letting capabilities as accommodation or dairy land, a very much greater rent could easily be obtained. I consider, too, that he has enormously increased the fee simple value of his property. There is nothing remarkable in what he has told you of his mode of treatment; he has simply managed liberally and judiciously, and not been afraid of using nitrate in combination with phosphatic manures. One thing he may be proud of, that his example has not been without effect on the shrewd observant Welsh farmer, who, except in politics, is a Conservative of Conservatives, and without the speculative element that characterises the canny Scot."

the stock-carrying capacity of the farm has certainly been than trebled. I have already said that in my first season n beasts were quite as many as it could carry. It is y fair to quote last summer season in comparison, because the three months' drought my clay land baked like a urnt brick, and all growth was at a standstill. But I on the 57 acres, after setting aside 23 acres for ing, a herd of twenty-three shorthorn cows, six heifers, horses, and forty-one ewes and lambs. Now—on the of November—I have grazing on these lands by night and ay twenty cows, seven two year old and yearling heifers, horses, and fifteen ewes. There is abundance of grass, the question being how long the weather will remain dry gh to permit of my keeping stock on it, and one field is as untouched, with a colour of emerald and a bottom so thick without any exaggeration one might bury one's boots in I hold in addition a small arable farm of 35 acres, with a cre field of rough inferior pasture, to which a few of the ger animals are sent in the winter months, when the her is too wet to allow of their treading my own, but this reservation I can say that my land carries all the : I have mentioned during winter and summer, and, in ion, an average number of fifteen or sixteen bulls and rs kept indoors, two cart-horses, and four carriage-horses. onsider that all my improvements have already paid for selves, and may say in proof of this that I would not ate to rent land in similar condition to that in which mine : twenty years ago and to attempt the same transformation, no further protection than such as a twenty-one years' would give me. The system I have adopted appears to ny land, and I mean to follow it, although it is possible in some respects it is capable of amendment. I am quite ied, however, that it has made a great change in the ity of my pastures and that the improvement is of a anent character. I believe that the progress may be nuous, and I shall not be quite satisfied until I have ght my inferior clay land into such a state of fertility every acre will carry and fatten a beast from May to aelmas.

—*Insect Pests of the Apple and Pear, and their Treatment.*
By FRED. V. THEOBALD, M.A., F.E.S., Foreign Member of the
Association of Economic Entomologists, U.S.A., Zoologist to
the S. E. Agri. College, &c.

All fruit-trees the apple and pear are most subject to the ravages of insect pests. A strange fact with respect to the insect enemies of these two fruit-trees is that many of them are universal. The Codlin Moth is as destructive in America as in European home; the Oyster-shell Bark-Louse is now found almost all parts of the world; the Woolly Aphis has spread from America to South Africa, and parts of Australasia; and the European Pear Midge has invaded the States. Numerous other similar cases could be mentioned. Such points in economic entomology are of the greatest importance, for they show us how easily these insect enemies may be distributed, not only from one part of our country to another, but from country to country, and it behoves us, therefore, to be on the alert to notice any new creatures which may come to us from abroad.

The most important apple pests are the Codlin Moth, the Winter Moths, the Lackey Moth, the Figure-of-Eight Moth, the Little Ermine, the Tortrices, the Woolly Aphis, the Mussel Scale, the Apple Aphis, the Apple Sucker or Pyslla, and the Apple-Blossom Weevil. The worst pear enemies are the Pear Midge, the Pear and Cherry Sawfly, and the Winter Moths. Numerous other apple pests also attack the pear, notably the Mussel Scale, Woolly Aphis, and Codlin Moth. To these must be added the Wood Leopard and the Goat Moths, which attack the trunks and boughs.

Several of these pests can be kept in check by spraying, others alone by preventive measures and remedies which can only be applied when we are familiar with the life-history of the pests in question. We must spray or set our trap just at the right time, or it will be of no avail. The fruit-grower must be acquainted with these pests and judge for himself the time when best to cope with them, as the date of appearance varies slightly every year and in various parts of the country, so that it is only possible to give an approximate date. Each pest is dealt with in this paper separately, special reference being made to those that have been prevalent during the past year. The photographic illustrations were taken for me by Mr. Hammond from either living or preserved specimens.

THE CODLIN MOTH (*Carpocapsa pomonella*).

The Codlin Moth deposits its eggs on the apple and sometimes on the pear, and thus we have the so-called "maggot," which is the cause of such serious loss in many orchards. It has been known as a source of trouble to growers for many years; as far back as 1635 we find an account of it in an old Dutch work,* and since then it has constantly been referred to. Mr. Whitehead states† that in 1877 as much as twenty to thirty per cent. of the apples in the Kentish orchards dropped off, and from this cause many of the stored apples would not keep. During the present year I have seen orchards in which as much as seventy per cent. of the fruit was damaged. In Devonshire and other cider districts, where less attention is given to the orchards than in districts where dessert fruit and the finer kinds of apples are grown, I have seen the ground literally covered by the fallen fruit. Old trees, covered with rough bark, moss, and lichens, form a harbour of refuge for this pest, enabling it to exist under the most favourable natural conditions.

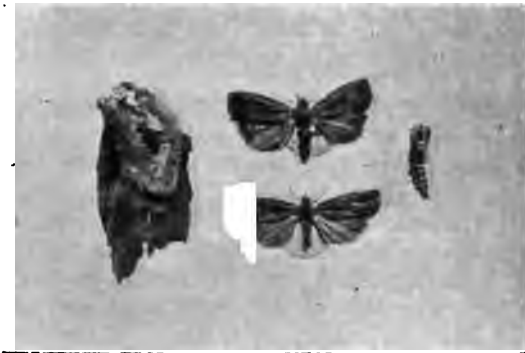
Life History of the Codlin Moth.—The moth (Fig. 1) is about three-fourths of an inch in expanse of wings; the forewings are striped with lines of grey and chesnut-brown scales, and near the hind angle of each is a large dark brown patch marked with streaks of gold or bronze; the hind wings are light greyish-brown, somewhat dusky towards the hind margin. The male is distinguished from the female by having a dark streak on the under side of each hind wing, and an indistinct dark line of hairs on the upper surface. These moths appear in the orchards at dusk during June and July. Although one brood in a year is the rule in this country, yet occasionally there may be a few of a second generation. In France and Germany there seem to be two broods every year, and in America there may be two or even three generations in the year in different areas. Some pupæ that I obtained in the early spring hatched out on May 20th, and these deposited a few eggs. These changed to larvæ, which matured, and gave rise to a second brood of moths (3) towards the end of July. Nevertheless, I have kept pupæ during the spring and until July before they have been hatched. The eggs are generally white, but are sometimes almost yellow in colour, and are semi-transparent round bodies, which are not easy to observe on the apple except in certain lights; part of their surface is marked by a network of ridges. They are deposited in and

* 'Metamorphosis Naturalis.' Gødærdt (1635).

† 'Report of Insects Injurious to Fruit Crops,' p. 63.

around the eye, on the sides, stalk, &c. I have been unable to find them on the leaves as mentioned by C. On the other hand, I have several times found them in the circumstance which Slingerland† has never observed. The number of eggs laid by each female has been variously estimated up to 300. The majority of affected apples contain one only, but many eggs may be laid on a single fruit. The hatch in England is in about eight days during June, and less in July. No matter where the eggs are laid, the maggot enters the apple at the calyx end. At first the larva lives on the apple just inside the calyx; it then comes to burrow down to the core, gradually increasing the size of the tunnel, from the opening of which the young maggot

Fig. 1.—*The Codlin Moth.*



(1) Adult.

(2) Pupa.

(3) Cocoon.

out its excrement. This, seen in and around the eye, is taken as a sign of maggot presence; but this symptom is not always marked. Later on the larva forms another exit hole at the side, base, or even near the top. This exit hole is at first filled up with silk and soft excrement; as the opening is formed the maggot still continues to feed in the apple some days, when, having cleared the opening, it crawls out. The period of larval life varies between twenty and thirty days. At first the maggot is white, with a black head and black spots on each segment; later, it becomes pinkish, the black spots disappear, the head and thoracic shield become black, and a few scattered hairs are found over the body. When

* Bulletin 51, Nebraska Experimental Station, 1897.

† Bulletin 142, Cornell University Agricultural Experimental Station, 1897.

ed it is about half an inch in length. The larva may be found on the ground in the apple, when, if not full grown, it comes out to feed upon it. It eventually leaves the fruit and crawls up the trunk of the tree. Should the larva mature while the fruit is on the tree it is said to crawl down to the ground and trunk; but many authorities state that it lowers itself to the ground by means of a silken cord. In any case, the larva comes across a piece of rough bark beneath which, for shelter, it forms its cocoon (Fig. 1) of fine white silk,

Fig. 2.—*Maggoty Apples.*



(Reduced slightly.)

h inside, often covered with little chips of wood outside, in all oval depression hollowed out by the maggot. They may be found in crevices of fences or under rubbish on the ground, but have found them spun up at the base of rough tufts of grass.

In some years many are not matured by the time the apples are gathered; these will go on developing, and will pupate in storerooms and barrels. It is stated that the larva does not change to a pupa until the spring, but this is not always the case, for I have frequently found pupæ in February. In some cases the larva remains some considerable time in the cocoon

during the winter ; but those which are matured early and which form a second brood, pupate in from three to five days after the cocoon is finished, pupal life lasting for three weeks. One brood is the rule, however, in this country. The moths may commence to deposit their eggs soon after the blossom has fallen, but by far the greater number are not laid until the end of June or July. It will thus be seen that spraying soon after the blossom has fallen will only be partially successful. We have this pest hatching out over a period of nearly three months, which accounts for finding all four stages at once; even as late as September I have found larvæ of all sizes in the apples.

Prevention and Remedies.—The Codlin maggot has in America been well kept in hand by spraying with Paris green, although this can never be a complete panacea, as Mr. Slingerland says in his report previously mentioned. In England, where we have practically only one brood spreading over three months, spraying is of only slight avail. July is the time when the attack is worst with us. Apples should be sprayed soon after the blossom has fallen when the calyx cup is still upright; the arsenic then lodges in the eye, and, unless rain comes and washes it out before the leaves of the calyx bend in, the poison will remain shut in the eye for some time. The best time to spray is two or three days after the blossom has fallen. Should it rain soon after the operation, the latter must be repeated. It is practically useless to spray after the eye is closed, which usually happens some ten to fourteen days after the blossom has fallen. It is extremely doubtful if the effect of the spraying will last until the middle or end of July, hence the larvæ hatching then and later may enter unmolested. Spraying certainly may be recommended, but it can only be partly successful. Paris green is said to be the best wash for "Codlin Maggot," mixed in the following proportions:—1 lb. Paris green to 180 gallons of water, to which add 2 lbs. of fresh slacked lime.

Combined trapping and the employment of natural enemies are likely to do most good. Trapping the larvæ is an old idea. This simple method consists of binding two or three times round the trunk of the tree, about a foot from the ground, a hay-band, or a few loose folds of sacking or old cloth. These bands should be set about the middle of June, and may be left on until the winter, when they may be taken off and burnt with the sheltering larvæ. Of course, some escape by crawling down the boughs. The best natural enemies are fowls and pigs; it is surprising how clean an orchard may be kept by keeping poultry under the trees; they are constantly hunting

out, and pick up all the larvæ of this and other pests, and do inestimable good. Where no notice is taken of windfalls, pigs kept in the orchards also tend to keep down this and other insect pests by devouring the apples and maggots as they fall, thus more than compensating for the small amount of harm they may do by rooting about. I have notes from various districts on the great use of birds as destroyers of the Codlin Moth. It is surprising how many empty cocoons were found on the trees in the spring, the occupants having been cleared out by the Blue and Great Tits. Lastly, as in all orchard attacks, it is essential that the trees should be kept clean—that is, free from rough bark, moss, and lichens, where these and other pests pass the winter in comparative safety. For this purpose caustic alkali wash used in winter is excellent.* A closely-related attack on apple has been reported to me twice this year. It was caused by an entirely different insect to the Codlin Moth, namely, the Apple Sawfly (*Hoplocampa testuinea*), which lives as a creamy white larva inside the apple, but which can be readily distinguished from the Codlin maggot by having a greater number of legs. The apple is also eaten out inside, not tunnelled.

THE WINTER MOTH (*Cheimatobia brumata*).

This is a widely distributed species and very destructive in its larval stage; but much of the damage attributed to it and the others of the wingless female group is done by quite different larvæ, namely, those of the family *Tortricidæ*. Still, *C. brumata* does a great deal of harm, and not only to apples and pears. The Winter Moth belongs to the group of *Lepidoptera*, known as *Geometridæ*. The larvæ of these moths can be told at once by the presence of one pair of prolegs instead of four in the middle of the body. They have also the typical six insect legs on the first three segments, together with the anal proleg. The larvæ eat the buds, blossom, leaves, and young fruit, and spin the blossom heads and leaves together. During the past year we have been comparatively free from its presence.

Life History of the Winter Moth.—The moth is so named on account of its time of appearance. The majority may be seen in the wing in November and December; but I have notes of it appearing in the second week in October and again as late as March, so that the time of emergence spreads over nearly six months. The male is about three-fourths of an inch across

* Caustic alkali wash is made as follows:—Dissolve 10 lbs. of caustic soda and 10 lbs. of carbonate of potash, and mix them with 100 gallons of water. Dissolve in boiling water 6 lbs. of soft soap and add to the wash.

the wings, which are reddish-brown to greyish-brown in colour with indistinct dark wavy lines on the fore-wings; the hind wings are slaty-grey; the body is thin and about half an inch long. The female is dull brownish-grey, the wings looking like small stumps. The males come out in the night and in the twilight, flying about along the hedgerows and in the

Fig. 3.—*Apple Tree stripped of its foliage by Winter Moth Caterpillars.*



orchards in search of the females. The female on coming out of the ground usually crawls up the trunk of the tree to deposit her ova, which are green in colour at first and spindle shaped. The eggs are sometimes laid on the twigs, but more commonly a single ovum is placed at or near the base of a bud. Each female can deposit as many as from 200 to 250 eggs. Previous to hatching, which commences about the time the buds begin to swell and burst, the eggs become reddish

2. The earliest time of incubation I have noted is March 14th, when numbers of the little larvæ were hatching out in Kent 1895. The larvæ are at first very minute, slaty-grey, yellowish-green, or dark brown creatures, which at once commence feed off the buds. As they grow they become greener, sometimes yellowish-green, with pale longitudinal stripes down the body. The larvæ are very variable, some when full grown being brown, some green, and others bright yellowish-green. Maturity is reached between the end of May and the end of June, when the caterpillar may attain the length of an inch, but usually it is only about three-quarters. It then either burrows itself to the ground by a silken cord, or else falls and burrows into the soil, if it is cultivated, or else spins a cocoon in the grass beneath the trees. The majority burrow an inch or two under the surface and form a cocoon, which is rounded outside with particles of earth. The caterpillar then changes into a dark brown pupa, from which the moth emerges in the winter.

Allies of the Winter Moth.—Three other species, more or less closely related to the Winter Moth, attack fruit-trees, viz., the March Moth (*Anisopteryx æscularia*) (Fig. 4 (2)), the Mottled Umber Moth (*Hybernia defoliaria*) (Fig. 4 (3)), and the Scarce Umber (*H. aurantiaria*). These are all more or less destructive in their larval stages, and work much in the same way as the Winter Moth. The March Moth is slightly larger than the Winter Moth, the male wing expanse being from an inch and a quarter to an inch and a half. The fore-wings are greyish-brown, with a darker brown waved line near the base, and another zigzag line bordered outside with a pale band and also a central spot on each wing; the hind ones are grey with a dusky spot. The female is quite wingless, with a bunch of hair-like scales at the base of the abdomen. The March Moth appears in March and April. The female deposits her eggs, which are pale brown and barrel-shaped, in tight bands round the smaller twigs. The larva hatches about May and soon attacks the opening buds; in colour it is greenish, mottled with darker green and with four yellowish lines down the back. Like the Winter Moth, it pupates in the ground in a long slender cocoon covered with earth. The larva can be distinguished from that of the Winter Moth by being much more slender. The Mottled Umber measures one inch and a half in wing expanse. The fore-wings are dull orange-yellow, marked with brown, and with two thick, dusky, wavy patches on each; the hind wings have a central dusky spot. The wingless female is yellowish, with black spots. This species appears in October, November, and December. The females ascend the

trunk and lay long yellowish-white eggs upon the shoots near the buds. The caterpillar (Fig. 4 (4)) is reddish-brown on the back, with a creamy line on each side and a dark spot on each segment, and is found feeding on the leaves and blossoms in May and June, reaching an inch and a quarter in length when mature. Many have been sent me from Sussex that were eating the young fruit. Like the previous species, pupation takes place in the ground. The Scarce Umber (*aurantiaria*) has yellowish-brown fore-wings powdered with brown, and with two brown lines, a dusky central spot and a row of dots on the outer margin,

Fig. 4.—*Wingless female Geometers.*



- (1) Males and female of Winter Moth. (2) Male March Moth.
 (3) Mottled Umber Moth (Male). (4) Larva of *defoliaria*.
 (5) Female *ascularia*.

the wing expanse varying from one and a half to one and three-quarters of an inch. The female is greyish-brown, with rudimentary wings of a pale colour speckled with brown; she lays her greenish eggs upon the fruit spurs. The larva is greyish-green, with a white line on each side, the head, legs, and anal segment being yellow. The life history is similar to the Mottled Umber Moth. Other species occasionally occur, but space forbids a description.

Prevention and Remedies.—With regard to prevention and remedies for these larvæ, little need be said save on the

of "washing." Grease-banding was once largely used, now being given up. It is worse than valueless, because it is a loss, for washing has to be resorted to, not only because many of these moths evade the bands, but because so much harm is done by other leaf-eating larvæ. In spraying against these pests and all other leaf-eating larvæ, arsenical washes are of any value. These arsenical washes are Paris green, purple, and arsenate of lead. Paris green at present is in favour; nevertheless, I believe that arsenate of lead will some time be recognised as quite as efficacious and certainly more useful.* To be a successful fruit-grower we must often have recourse to these arsenical sprays to keep the leaf-eating insects in check. The spraying should first be done just as the buds show signs of bursting, and again when the blossoms are in a third washing may later on be necessary. Winter spraying with the alkali wash is also advisable where these insects abound, as I find many of the ova are thereby injuriously affected. The wash should be used as late as possible in the season, as I have noticed that many eggs are affected when the time is nearing the time for its escape, whereas when the egg was only just forming the eggs incubated in the ordinary Poultry are found to devour the larvæ greedily as they reach the ground to pupate. It is most important that all trees should be burnt, as many eggs are so destroyed.

THE WOOD LEOPARD MOTH (*Zenzera vesiculi*).

From year to year now and then enquiries are made concerning this wood moth, whose larvæ tunnel into the wood of apple, walnut, and other trees. Branches so attacked die off, and in whole trees become honeycombed and are thus readily broken down. The moth measures two and a half inches across the expanded wings in the female, less in the male. The wings are white, with shiny blue-black spots dotted over them. The moths appear during July and deposit their eggs in the bark of the trees. The female is provided with a long ovipositor. The larvæ soon after hatching burrow for a distance of a foot or more into the wood, and live for one or two years inside the tree. On reaching maturity the larva makes a cocoon of wood chips and silk near its entrance, in which it changes to a brown bristly pupa. The larva

arsenate of lead is made in the following way:—Dissolve 4 ozs. of arsenate of lead (40 to 50 per cent. strength) in a little water; then dissolve 12 ozs. of commercial acetate of lead, also in water. Add the arsenate of soda to the acetate of lead, stir well, and then add the acetate of lead and well mix. Add 4 lbs. of dissolved soft soap.

(Fig. 5 (5)) is white with black spots on each segment, the second segment having a brown dorsal plate; some are almost yellow in colour, and when mature reach nearly two inches and a half in length. The perfect insect is preyed upon by bats, and the eggs, which are oval orange bodies, are devoured by Tits (*Paridæ*).

As a protective measure, all diseased boughs should be cut off and burnt in the winter.

THE GOAT MOTH (*Cossus ligniperda*).

Another moth, working in a similar way to the former in its larval stage, is the Goat Moth (Fig. 5 (1)). This large insect

Fig. 5.—Some Wood Boring Lepidoptera.



- (1) The Goat Moth (upper figure). (2) Larva (right).
 (3) Pupa from which moth has escaped. (4) Wood Leopard Moth (lower figure).
 (5) Its larva (left).
 (Reduced 2½ times.)

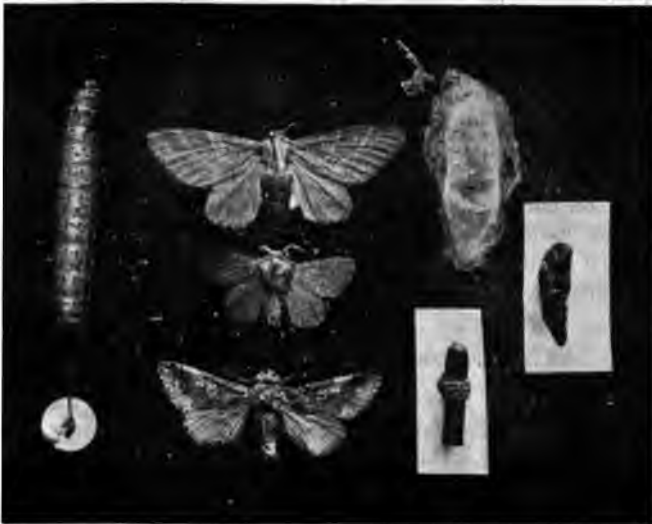
measures about four inches in wing expanse; in colour it is greyish-brown, with darker brown markings. The female lays her eggs during the month of June in crevices in the bark of apple, pear, and various forest trees. The larvæ form long tunnels in the wood, where they remain for three years. These repulsive-looking creatures measure over four inches when full grown; they are deep dull yellow at the sides, and bright mahogany colour on the back. For some unknown reason they may leave the tree for a time and wander about. When mature in the spring, they turn to large brown pupæ, and

ed in a cocoon of silk and wood chips they lie near the
 ig of their tunnel. The moth emerges from this pupa in
 and July. Recently many have been sent to me that
 upated in the earth. These two wood-borers can only
 stroyed by either blowing or pouring some obnoxious
 ; or liquid into the tunnels. Tobacco or sulphur fumes
 to answer best, whilst, as a liquid, paraffin emulsion has
 found of benefit.

THE LACKEY MOTH (*Clisiocampa neustria*).

ie larvæ of the Lackey Moth are often injurious to orchards,
 cularly to apple foliage. The female moth (Fig. 6) is

Fig. 6.—Leaf eating Apple Pests.



(1) and (2) Lackey Moth (♂ and ♀). (3) Cocoon. (4) Pupa. (5) Eggs of same.
 (6) Figure-of-Eight Moth (lower figure). (7) Its larva.

vnish-red in colour, with a pale stripe on each wing—some-
 as this stripe is dark; the wing expanse measures one and
 quarter inches. The male (Fig. 6 (2)) is more of a yellowish-
 wn, and smaller than the female. They appear in July and
 just, when the female lays her eggs in a tight band round
 e twig, and there the eggs remain all the winter. The
 pillars hatch out in April and May, and live under a tent
 ilk in large companies; the tent gradually spreads out as

the occupants grow. When mature the larvæ reach about two inches in length. They are dark brown in colour, with longitudinal stripes of red, blue, and yellow, and are covered with tawny hairs. When full fed they leave the tent, and spin a loose cocoon of pale yellow or white silk between the leaves, on the bark, amongst rubbish on the ground, or on fences; the larva here turns to a black pupa. These larvæ strip off all the foliage near them, and in some years are very plentiful. I have seen considerable harm done by them in Hunts, Kent, and Gloucestershire. This pest cannot be affected by spraying, and is best destroyed by cutting down the tent with its occupants before they disperse over the tree.

FIGURE-OF-EIGHT MOTH (*Diloba cæruleocephala*).

The caterpillars (Fig. 6 (7)) of this moth also often attack apple leafage. They are dull-greenish in hue, with a yellow stripe on each side, one in the middle, and yellowish below, and each segment is spotted with black. When mature the larva is about an inch and a half in length; it then spins a cocoon of silk on either bits of bark, or on stems, twigs, pailings, &c. The pupa is reddish-brown, and hatches in September. The moth (Fig. 6 (6)) has brown wings, marked with dark and pale brown; on the fore-wings are two whitish figure-of-eight marks, hence its name. The curiously ribbed brown eggs are laid singly, as a rule, on the stems and twigs, and they hatch out in the spring. Spraying with arsenates soon kills the young larvæ.

SMALL ERMINE MOTH (*Hyponomeuta padellus*).

During the past year this small moth has been very abundant in the South of England, as also has another closely related species to it. The larvæ hatch out in the autumn from a little heap of eggs laid by the female in July and August. These eggs are covered with a kind of gummy coat, and beneath this the larvæ live during the winter.

In spring they come out and get into the leaf whorls and blossom-clusters to feed. As the foliage and blossom expand, they congregate together again and form a common loose silken web in which they live; when full-grown they are slaty-grey, with black spots, and are about three-quarters of an inch long. Pupation takes place in little silken cases in the web, the pupæ being dark brown, with a yellow body. The moths are pretty, satiny, whitish-grey creatures, with irregular rows of black dots. In length they are about one-third of an inch, with a wing expanse from just over a half to three-quarters of an inch.

uring some years, especially in 1867, 1877, and 1880, this species has been known to strip the trees quite bare by July. The Little Ermine is also prevalent on hawthorn. Another closely-related species, *H. padi*, is sometimes found on apple, but more frequently on plum.

Early spring washing with arsenates, and winter washing with alkali wash, will keep them in check.

TORTRICES (*Tortrix heparana*, *T. ribeana*, &c.).*

After making a study of the larvæ on fruit-trees, I have come to the conclusion that quite fifty per cent. of the damage to foliage is done by little caterpillars belonging to the above-named family of moths. The larvæ can at once be distinguished from the Winter Moth larvæ by the greater number of legs, as shown in the figure (Fig. 7, *a* and *b*). None of these moths, which are all much smaller than the male Winter Moth, have wingless females. No less than six varieties are found in large numbers on the apple and pear, and many others occur occasionally. The commonest species on the apple seem to be *T. ribeana* and *T. heparana*, both small moths with truncated fore-wings. The former is pale yellowish-brown on the fore-wings, with dark brown markings and slaty-grey hind wings. *Heparana* is pale reddish-brown, with dark central markings, and with slaty-grey hind wings, with a yellowish fringe. Both vary in size, from two-thirds of an inch to a little under one inch in wing expanse. The larvæ of *ribeana* are dark olive-green, with brown head and black spots with pale edges, and with yellowish-green sides. They are found in May and June, both in the leaves and blossom, and there pupating. The pupa, which is reddish-brown, remains for three weeks, the moth emerging in June and July. The larva of *heparana* is bright green, darker along the back, and lives like the former. These and others of this group pass the winter as ova on the twigs and below the buds. As speaking generally, all hawthorn-feeding larvæ may invade the apple, hence we have a great variety of species to contend with.

These "micros" are best destroyed by arsenical washes, which must be used as soon as the larvæ hatch from the egg, before they draw the leaves and blossom together.

THE APPLE-BLOSSOM WEEVIL (*Anthonomus pomorum*).

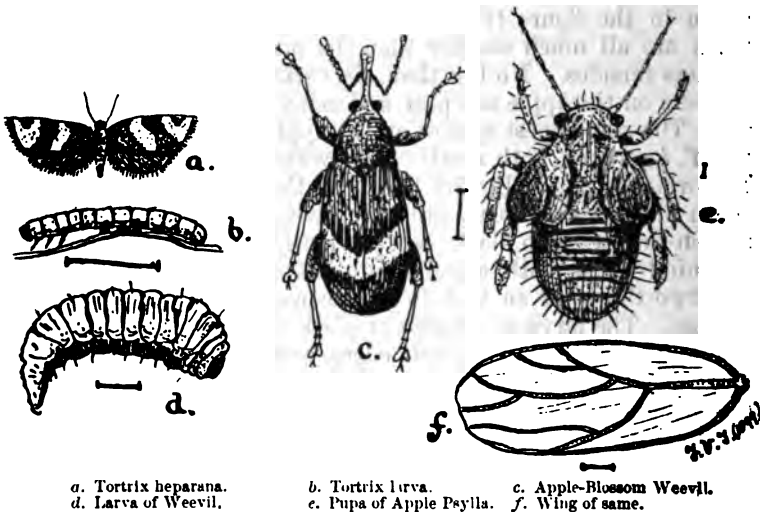
In cold and unfavourable weather, when the flow of sap to the developing blossom buds is hindered and their opening retarded, much damage is done by the larvæ of a beetle known

* For a list of these and other "micros" on fruit, *vide* 'Journal of Southern Agricultural College,' Part vi., p. 13, and Part vii., p. 19.

as the Apple Blossom Weevil (Fig. 7, c). This pest has been present as usual this season in Kent, and has been very destructive in parts of Herefordshire and Worcestershire. Pear is occasionally attacked as well as apple. In parts of the counties mentioned as much as forty per cent. of the blossom has been destroyed by this insect. It seems to be found abundantly in the west, south, and south-east counties, also in the midlands, and is recorded as far north as Edinburgh.

Life History and Habits.—This weevil varies in length from one-eighth to one-sixth of an inch; in colour it is blackish, covered with an ashy-grey pubescence; the proboscis is long and spatulate, and the thorax curved, with a whitish pubescence;

Fig. 7.



a. *Tortrix heparana*.
d. Larva of Weevil.

b. *Tortrix* larva.
e. Pupa of Apple Weevil.

c. Apple-Blossom Weevil.
f. Wing of same.

on the elytra is a characteristic V-shaped pale mark. The beetles hibernate during the winter under rough bark of trees, beneath rubbish, in hollow stems, &c., near and in the orchards. They come forth in spring ready to attack the blossom as soon as it shows. The ova are white oval bodies laid in the blossom-buds before they burst. How the female reaches the buds is still an open question, for although they are provided with wings they seldom fly. Curtis* avers that "the females will not readily fly," and, "that the males are seen on sunny mornings flying round the trees in search of the females, who generally are crawling over the branches." The adults are very timid, falling

* *Gardner's Chronicle*, p. 556, 1844.

the ground at the least shock. The majority of them seem ascend the tree *viâ* the trunk. The female lays her eggs only the unopened blossoms; as soon as these commence to expand and leaves off, as the larvæ cannot live in them when opened. Thus it will be seen that when the weather is such as to retard the opening of the blossom, the period of oviposition is much retarded, and so serious damage may be done. A single egg only seems to be laid in each flower, the act of oviposition taking at least three-quarters of an hour. Each female deposits about fifty eggs. The holes in the blossom-buds, &c., in which the eggs are deposited, are made by means of the rostrum, the egg being then pushed in and the hole closed with a drop of saliva. In from five to seven days the egg hatches into a small white footless maggot, which feeds upon the stamens, &c., for two weeks. It is about three-sixteenths of an inch in length when full grown, and is creamy-white, much wrinkled, with a brown head. Inside the still unopened and dying bloom the maggot changes to a pale pupa, which hatches into the beetle in from seven to ten days. The flowers become brown. Shortly after being hatched the beetle eats its way out of the dead or dying blossom, leaving behind a round hole showing where it has escaped. The adult then feeds upon the apple leaves, &c., until the autumn, when it goes into winter quarters.

The attack can be discovered by the scorched appearance of some of the blooms and their failing to open when others are fully expanded; the beetles may also be seen at work in the sunshine, when a good jarring will cause them to fall to the ground. In most cases the invaded blossoms fall when the larva has reached maturity; in any case they will fall if the tree is shaken. The beetles seem to appear about the first week in April, but the time varies every year and in different parts. Pears are only lightly damaged by the pest.

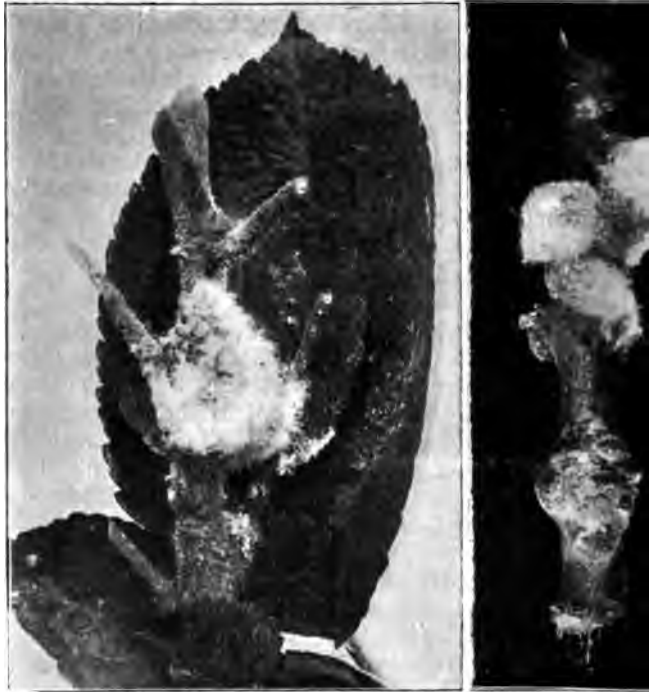
Prevention.—Nothing can be done to remedy this evil when once exists, the larvæ being safely housed from any insecticide. In badly infested orchards it is certainly worth while to “jar” the trees so as to cause all diseased blossom to fall, and to collect and burn them before the beetles escape. Jarring for the beetles themselves in the early part of the year, so as to cause them to fall on to cloths beneath the trees, is another good method employed by some growers. All rough bark should be cleared off the trees in the winter, and all rubbish heaps round the orchards should be burnt at the same time. Spraying with arsenates seems to be of no avail. Possibly a kaffir-oil-emulsion might deter the beetles from laying if sprayed over the young blossom when the beetles are noticed on the trees. The natural enemies of this pest are few, a hymenopteron

Cerceris arenaria provisions its nest with them; an ichneumonid of the genus *Pimpla* deposits its eggs in their larvæ, (Paridæ) and Woodpeckers (*Picadæ*) are said to feed on them.

WOOLLY APHIS (*Schizoneura lanigera*).

In most orchards this pest is known, and when neglected sometimes brings complete ruin with it. For instance

Fig. 8.—Woolly Aphis on Apple Twigs.



... a single gallon of cider was made in Gloucester in 1870 on account of its ravages. It is especially met with in old standing, where its white wool may be seen hanging from the boughs. During the past year it has been particularly abundant in various parts of the country. This is caused by an Aphis, whose workings may be detected by the white flocculent wool that is excreted from the backs of the lice and wingless females (Fig. 8). The Woolly Aphis

trees by attacking the bark and young wood. Like all plant lice," it is provided with a sharp piercing rostrum, and by means of this the lice so irritate the tissues that they cause the young wood to swell up and split. Large diseased patches are thus produced which are often attributed to "canker." Although it is chiefly in old trees that we notice it, nevertheless young stock suffer severely. The cracks, swellings, and crevices used by the insects serve as shelters for them in inclement weather. All varieties of apple are attacked above ground.

Life History.—This plant louse, sometimes called the "American Blight," is devoid of those curious aphid structures, the cornicles or honey tubes. The wingless female is oval and dark brown, with short dark reddish-brown legs and antennæ; the back is covered by a quantity of white wool, which is secreted by special glands. In the spring these females produce pale reddish lice—the larvæ—which also excrete a quantity of spiral filaments. These lice grow into the wingless females. Occasionally winged females are produced from July to September. The winged female is chocolate-brown in colour and is preceded by a pupa, which is dull brown with yellowish legs, antennæ, and wing-cases. These aerial females fly off to other trees and start fresh colonies, asexually. Towards the end of the year may be produced wingless oviparous females and males, both being arostrate. These pair and the female lays a single egg and then dies. The egg is placed close to the ground on the trunk and, according to Mr. Stedman,* is usually covered by the dead skin of the mother; it remains on the tree all the winter, and hatches out in the spring. The survival through the winter is mostly by hibernating females.

Subterranean form.—Mr. Stedman, in the paper just quoted, has clearly shown that a "root form" of the Woolly Aphis exists. The root form sucks the juice of the roots and produces swollen galled patches. The roots become decomposed—so called "root-rot"—and owing to this the trees either get blown down or die from the effects of the sap being drawn away from the roots. "The presence of the root inhabiting form," says Mr. Stedman, "is readily detected by removing the earth from the roots near the trunk of the infested tree. The appearance of a bluish-white cottony or mildew-looking substance, or of knotty and distorted roots, will indicate its presence." The roots are attacked near the main trunk, and it seems that migration can take place between the roots and the trunk. I have frequently sought for this subterranean race, but have

* Bulletin 35, Agricultural Experimental Station, Missouri, p. 48, 1896.

never been fortunate enough to find it, nor do I know of any authentic record of it in this country. Woolly Aphides have been sent me from apple roots and the ground around, but in all cases they were *S. fodiens* of Buckton, quite a distinct species.* The natural enemies are the same as those attacking the next insect, but they do not work to the same extent, and do little good. The Blue Tit (*Parus cœruleus*) is the most important natural check we have; the service it renders to orchards is inestimable.

Prevention and Remedies.—The vegetal growth so often seen accompanying this blight should always be cleared off by the alkali wash in the winter. This remedy not only removes the vegetal encumbrances, but also the hibernating *lanigera*, and tends very largely to check the ravages of this pest. For "American Blight" on the trees in summer the most useful wash is composed of the following:—Soft soap 10 lbs., quassia 6 lbs., soft water 100 gallons. Washing should commence as soon as any sign of the white wool appears.

Painting the trunks as far up and as close to the ground as possible with lime-wash and paraffin is beneficial. It is very important that young stock, especially the roots, should be examined before being planted, to see if there are any signs of the root form. Should such occur the roots should be dipped in a warm mixture of soft soap and paraffin emulsion, and well moved about in it. If we suspect that the root aphid is at work examination should be made round the trunk, and if there are any signs of it an ounce of bisulphide of carbon should be injected into the soil, about two feet away from the trunk on each side. Special instruments are made in the States for injecting this *inflammable poison*, but it can be used by making a hole a foot deep with a crowbar and then pouring the bisulphide in and closing the hole up; care must be taken not to let it touch a root, as it kills it when in contact. It is by far the most potent insecticide for ground insects, and can be used to advantage if employed with reasonable care.

THE APPLE APHIS (*Aphis mali*).

The Apple Aphis, usually spoken of as the "Green Fly," lives on the sap taken from the leaves and blossom. It appears on the trees as soon as the buds burst, and even then in its small numbers occasions much loss, often causing the blossom to shrivel. When fruit manages to develop from the attacked blossom it is small and deformed. The majority of the aphides

* 'Report of Insect Pests,' 1894, p. 5. (F. V. T.)

ve under the leaves and make them first curl up, and later to become brown and fall prematurely. The enormous rate of reproduction in aphides by asexual methods enables them under favourable circumstances to literally cover a tree. In cider-making districts the ravages of this blight are dreaded, not only because it lessens the crop, but also because it affects the quality of the cider. During the past year the aphid attacks have not been frequent, although the climatic conditions have been most favourable to them.

Life History.—If we examine the base of the apple buds in winter we shall find glued to the rind the yellowish-brown oval eggs of this “dolphin”; some are also laid on the forks of the twigs. The young aphides hatched from these in the spring soon grow into large dark green fat creatures, the so-called “mother queens,” who bring forth living young—lice—in about two weeks. The lice are pale green at first, but become darker, almost brown, and they likewise produce living young, and so on for several generations. Now and then some of these lice grow into pupæ, from which winged viviparous females come. The winged female has a green body, with black dots on each side, black head and thorax, and long narrow wings. They fly from tree to tree and so set up fresh colonies. Late in the autumn an oviparous wingless female and male appear, the former depositing from two to four eggs, that remain on the trees during the winter. The females may be found as late as November.

Prevention and Remedies.—Even if we escape an early attack from the progeny of the winter eggs we are always liable to a winged invasion. Washing with quassia and soft soap wash* is the best remedy, as it not only kills the lice, but has decided cleansing properties which paraffin emulsion, which some prefer, has not. It is most important that the trees should be sprayed before the lice have increased so much that they curl up the leaves, as then they are safely protected from all insecticides.

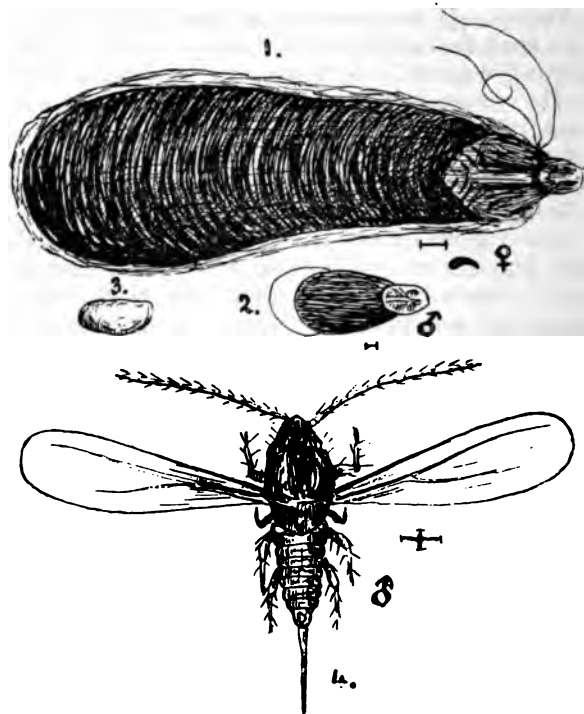
THE OYSTER-SHELL BARK LOUSE (*Mytilaspis ulmi* (Linné)).

Scale insects, or Coccidæ, include some of the worst fruit pests. In England we have very few injurious species. The only one infesting the apple and pear is the above-named, often called the “mussel scale” in this country. It is very abundant, especially in west country orchards. Mr. Whitehead states,

* Quassia wash for ordinary aphides is made of from 5 to 10 lbs. of boiled quassia chips and 6 to 8 lbs. of soap to 100 gallons of soft water. The quassia should be boiled separately for two hours, with just sufficient water to cover it, and the strained extract well mixed with the dissolved soft soap.

"in the primæval orchards of Devon, Herefordshire, Somerset, and Worcestershire, where the trees are close together and their branches form an impenetrable shade, the scale insects find favourable conditions for their increase."* This scale affects both old and young trees alike, often to such an extent that no fruit matures. Numerous other trees, besides pear

Fig. 9.—*The Oyster-Shell Bark Louse.*



(1) Female scale. (2) Male scale. (3) Egg (mag.). (4) Adult male.
(Lines represent nat. size.)

and apple, suffer from it. I have frequently seen it on black and red currants, also on the quince, peach, and apricot. Tasmanian apples coming to this country are often covered with it. I have known English apples to be attacked, but this is unusual.

Life History and Habits.—The scale (Fig. 9 (1) and (2)) is a covering, beneath which the insect lives permanently if a

* 'Report of Insects Injurious to Fruits,' p. 103.

male, and under which it develops if a male. The scale is greyish-brown to deep brown in colour, and is made up of an excretion from the body of the insect, together with the cast skins (*exuviae*) of the developing creature. The female scale (1), which attains to one-tenth of an inch in length, differs from that of the male. It is long and narrow, widened behind, and slightly curved. The male (2) scale I have never seen; it is described by Hunter* as being "much smaller than the female, and does not contain the curve shown in the female scale, nearly straight, widening posteriorly." The male is very rare. In the winter we find under each scale yellowish-white, dust-like specks; these are the eggs. I have counted as many as sixty under one scale; but in Tasmania as many as seventy to seventy-five may be found (Lounsbury). In this country the number varies between thirty and sixty. The ova hatch out in May; May 20th is the earliest date on which I have seen the larvæ. As soon as they are born they escape from beneath the scale at its broad end and wander about over the tree; eventually they fix upon some tender spot, and attach themselves to it by their long, thread-like proboscis. The larvæ are minute, active, dull-white six-legged creatures, provided with antennæ and two long anal hairs. As soon as they are fixed they throw out at each side the secretion which hardens, and, with the skins that they moult, forms the scale, which keeps on growing. Beneath the shield the larva loses its legs, &c., and, degenerating into a fleshy apodal lump, becomes the female. But if the larva is to become a male, it throws off its appendages, and then enters the so-called propupal stage, in which new legs, &c., are formed, and two bud-like wings. The male, figured by Howard,† has two wings and a long, pointed tail, and fertilises the female under her scale. In England there is only one brood. I have seen quite young stocks fresh from the nursery coated with this pest. Needless to say, the trees did not grow, and some have succumbed altogether. The damage is done by the sucking out of the sap.

Prevention and Remedies.—For scales three methods of treatment have been employed abroad, namely, resin wash, paraffin emulsion, and hydrocyanic acid gas treatment. The gas treatment is best, and in badly infested orchards of small trees it might be employed over here; but for this, scale washes are, I

* 'Bulletin Department Ent. Kansas,' p. 26, 1898. (Scale Insects Injurious to Orchards.)

NOTE.—Mr. T. Cookerell, of Mesilla Park, New Mexico, U.S.A., in a recent letter informs me that the proper name for the "mussel scale" is *M. ulmi* (Linné) and not *M. pomorum*.

† 'United States Department of Agriculture Year Book, 1894.'

think, sufficient. Resin wash* is an excellent remedy in such cases, if applied just before the buds burst. In winter the most successful way of treating it is with the caustic alkali wash referred to before, the wash being much more effective if soap is added. With regard to spraying with paraffin emulsion when the young are moving from under the scales, nothing can be done, unless the orchardist is provided with a microscope, and knows the time the young are hatching out. Some years I have found them early in May, in others not until June, so that if we sprayed in the middle of May in the latter case, or in June in the former, we should do no good, and paraffin emulsion does not harm the scale itself to any appreciable extent. Still, if we know when they hatch out, some good may be done by spraying, as the young are vulnerable for a week after they are fixed. Painting the tree trunks is also of some value; but, as many scales inhabit the upper branches we constantly get migrations downward. All fruit-growers should carefully examine young stock for scale and Woolly Aphis, and refuse it if either is present.

Means of Dispersal.—From one part of the country to another scale makes its way on nursery stock. It would doubtless do much good if nurserymen fumigated their stock with hydrocyanic acid gas before distributing it, so as to rid it from all possible insect pests. Locally the young scales get spread either by the wind, or on the bodies of other insects, or by the means of birds, many crawling on to birds' feet, &c., when perching on a diseased tree. It is possible also that foreign fruit may help to keep up its numbers, for much Mussel Scale is imported at times. Its natural enemies in England are the Lady Bird (*Coccinellidæ*) and some *Chalcid* flies alone bear of any importance.

THE APPLE PSYLLA (*Psylla mali*).

Both from Kent and Herefordshire reports reach me of the damage caused by this insect. It belongs to the hemipterous family *Psyllidæ* and is very harmful to the expanding leaves and blossom-buds, sucking away at the sap and causing the leaves to shrivel up. The fruit does not develop at all, and the young blossoms fall off brown and withered.

* Resin wash is made as follows:—Resin 24 lbs., caustic soda 3 lbs., soap 4½ lbs., soft water 100 gallons. Crush the resin and put in cooking vessel with two-thirds of a gallon of water to every pound of resin. Boil the caustic soda, melt the soap, and add it to the soda and well mix; whilst still hot add the resin to the soda and soap and stir until dissolved. Keep boiling for 10 minutes after the mixture becomes clear deep brown; then add enough water to bring mixture up to 25 gallons. When used add three times as much warm water as this concentrated wash.

Life History.—The apple-sucker (Fig. 7 (e)) is found in winter in the egg stage. The *Psylla* eggs are oblong and pure white in colour, often laid in rows amongst the soft hairs of the year-old shoots. Now and then they may be found on the thick twigs and even upon branches. As soon as the buds begin to swell the ova hatch into little flat yellowish-green and brown larvæ, which enter the buds and live between the scales. After a few days they moult, and then there appears from the anal end a silky thread with a globule at the end. At the second moult numbers of these structures appear, the larvæ being buried in a mass of threads. The pupal stage can be known by the rudiments of wings, like buds, at the sides. The adults are first noticed in Kent about the beginning of June. The adult is yellowish-green, with four transparent wings; the antennæ end in a bifurcate bristle. The colour varies, especially towards the end of the season; some are variegated with red and brown, others are bright green, dull green, or yellow. The male is about one-twelfth of an inch long, the female slightly larger. They are especially noticeable about the end of September, when we find several settled on a single leaf. One of their characteristics is a curious skipping movement, by which they spring from leaf to leaf. Egg-laying goes on in some seasons until the end of October. There is a single generation only, I believe.

Prevention and Remedies.—There is no doubt that washing for this pest is excellent. Nothing has proved more successful than quassia and soft soap wash. I believe growers would find this most beneficial if used in the autumn directly the crop is gathered; many of the adults would then be killed before they had laid eggs. Washing should begin in the spring as soon as the buds begin to swell, and when we observe the white eggs giving out their young, so as to get at the larvæ before they enter the buds. In such an attack it is easy to miss the two or three days during which the young *Psyllæ* have taken up their abode and are thus safe, so a sharp look-out must be kept for the hatching of the eggs.

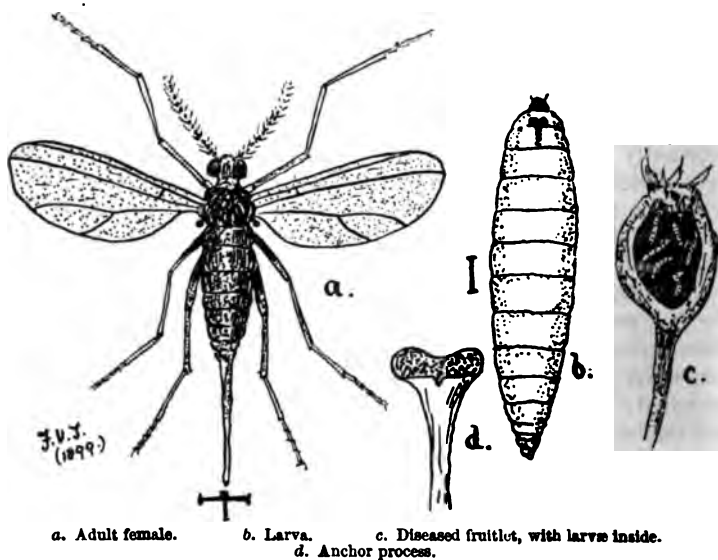
THE PEAR MIDGE (*Diplosis pyrivora*).

One of the most serious drawbacks to the successful cultivation of pears is the Pear Midge (Fig. 10). During the last few years its ravages have been very serious. Several growers in Herefordshire have lost practically all their crop from it this season. I do not know if it is found in the north of England, but in the south-east, and in many districts of the west, it is a great evil. It attacks the young fruit, which, when about the

size of a cob-nut, becomes distorted and falls, owing to the working of the midge maggots inside.

Life History.—This little pest belongs to a group of flies called Cecidomyidæ. The fly is a minute grey-black midge, with pale brown antennæ, and body covered with pale hairs. In length it is about one-twelfth of an inch. The wings are characterised by having few veins and are slightly hairy. The female has a long ovipositor, by means of which she places her eggs in the pear-blossom, whether unopened or opened. As many as twenty eggs may be laid in each flower, but about a dozen is more frequently the number, which hatch in from

Fig. 10.—*The Pear Midge.*



a. Adult female.

b. Larva.

c. Diseased fruitlet, with larva inside.

d. Anchor process.

four to five days. The maggots live inside the young fruit, causing it first to become deformed, and then to decay inside and shrivel up. These larvæ are creamy-white and reach one-sixth of an inch in length. In Kent they become full-fed about the second week in June, but earlier, it seems, in Herefordshire (Gettling). When the fruitlets fall off the larvæ may or may not escape and pupate either in the ground or in the decaying pear. When in the ground they form a little cell of silk and earth, in which they change to the pupa, and remain beneath the trees in that condition all the winter.

Prevention.—As far as possible all infected fruit should be collected and destroyed. At present the only way to prevent

ack seems to be by applying kainit at the rate of five dweight to the acre under the trees just before the larvæ nce to fall. Professor J. B. Smith advises half a ton to re as a preventive. Experimentally I have found the of kainit applied in the quantity first-named fatal to a umber of the larvæ. Spraying with paraffin emulsion fore the blossom bursts might ward off attack.

THE PEAR SLUGWORM (*Eriocampa limacina*).

Pear Slugworm is the larva of a sawfly known as *mpa limacina* (Fig. 11). It takes its name from its

. 11.—*The Pear Slugworm and adult Sawfly (E. limacina).*



(Natural size.)

ar slug-like appearance. In Gloucestershire it is called "Sneg." Cherry is attacked by it as well as pear. It res the trees by devouring the upper part of the leaves, all but the lower epidermis. When the trees are ed early in the year the leaves fall off, and a fresh lot of is sent out, which weakens the tree. The majority of

the slugworms, however, appear in England towards the end of summer and in the autumn. Pear leaves are often covered by them in September, and this may cause premature fall of leafage and late fruit. Large numbers have been preserved in the south and south-east parts of England this year.

Life History.—The adult sawfly is small, black and glossy, about three-eighths of an inch across the expanded wings which are iridescent, with a smoky patch in the middle. The adult appears first in April and deposits her eggs singly on the under side of each leaf, the position being easily known by a small brown spot that appears over it. The egg hatches in about a week, and the “sneg” escapes from the top of the leaf. The larva is at first white, but later, after exuding from its skin a slimy substance, it becomes deep bottle-green in colour, with a much swollen head end; its legs are twenty-two in number. In about four weeks the slugworm reaches maturity, when it changes to a dry, wrinkled, dull yellow creature about half an inch in length. It then passes into the ground, where it forms a little cell and pupates. So far I have observed three broods in England. Pupal life lasts two weeks in the summer. The last brood all enter the ground and remain beneath the surface as larvæ during the winter, pupating in the spring. The length of all the stages is very variable. I believe more than a dozen broods exist, although I have not been able to discover more than that number.

Prevention and Remedies.—Lime spread over the soil at the time the larvæ are going to earth is of some good in checking their increase. Spraying is the most successful way to deal with this pest. The fact that it can exude this slime renders any irritant such as hellebore powder (which is an excellent poison for all dry-skinned sawfly larvæ) uncertain in action; in any case two dustings would be necessary to reach the root. On the other hand, arsenical spraying poisons the leaves which the larvæ feed, and will soon clear them off. Arsenic of lead has been found of particular benefit; reports also of the good results derived from Paris green. Where the fruit can be picked early the trees should be washed in the autumn as lots of the “snegs” go on feeding until October, and when these are killed there will be many less to attack the fruit the next year.

Numerous other insects occasionally attack apple and pear, amongst which the following are some of the most important:—

Shot Borer Beetle (*Xyleborus dispar* and *Saxoseni*). Attacks wood and bark. (Agri. Zool., p. 150.)

Fruit-Tree Beetle (*Scolytus rugulosus*). (Board Agri. J.)

Vol. IV., no. 4, p. 477, Whitehead.) Attacks bark, &c., especially of smaller branches.

Cockchafers (*Melolontha vulgaris*, *Phyllopertha horticola*, and *Rhizotrogus solstitialis*). Attacks leafage and roots. (Agri. Zool., p. 145).

Leaf Weevils (*Phyllobius maculicornis*, &c.). (British Coleoptera, Vol. V., p. 204, Fowler.) Attacks leaves and blossom.

Red-legged Weevil (*Otiorhynchus tenebriosus*). (Agri. Zool., p. 141.) Attacks leaves.

Purple Apple Weevil (*Rhynchites Buccus*). (The Apple-Blossom Weevil, by F. V. T., p. 11, 1897.) Attacks the apples in May and June.

Twig-Cutting Weevil (*R. interpunctata*). (The Apple-Blossom Weevil, p. 12, F. V. T.) Cuts off tips of the young shoots.

Vapourer Moth (*Orgyia antiqua*). (Rept. Ins. Inj. to Fruits p. 51, Whitehead.) Attacks the leafage.

Case-Bearer (*Coleophora anatipenella*). (Journ. S. E. Agri. Coll., pt. 7, and Agri. Zool., p. 192.) Attacks leaves.

Pear-Leaf Blister Moth (*Cemiosoma scitella*). (Journal S. E. Agri. Coll., pt. 8, pp. 21-31, F. V. T.) Burrows in apple and pear leaves.

Brown Tail (*Porthesia chrysorrhæa*). Found on leafage. (A treatise on Insects Injurious to Gardeners, Foresters, and Farmers, p. 190. Eng. Trans., V. Köller.)

Gold Tail (*P. auriflua*). Found on leafage; often very common in the south of England. (Journ. S. E. Agri. Coll., pt. 8, p. 47, F. V. T.)

Small Eggar (*Eriogaster lanestris*). Found on leafage, gregarious like the Lackey Moths.

Pale Brindled Beauty (*Phygalia pilosaria*). (Jour. Bd. Agri., no. 1, Vol. V., p. 53, Whitehead.) Eats leafage.

Social Pear Sawfly (*Lyda pyri*). (Brit. Phy. Hymenoptera, Vol. III., p. 97, Cameron.) Makes nests of silk; eats foliage.

Wasps (*Vespa vulgaris*, *rufa*, and *sylvestris*, &c.). (Agri. Zool., p. 155.) Attacks fruit.

Pear Leaf Blister Mite (*Phytoptus pyri*). (Journ. S. E. Agri. Coll., pt. 7, p. 6, F. V. T.) Found on leaves and buds.

Pear Leaf Cecid (Midge) (*Cecidomyia pyri*). Account Brit. Flies, Vol. I., p. 67, F. V. T.) Curls up borders of young leaves.

VI.—*Rural Education.* By Sir C. T. D. ACLAND, Bart.

No one who has of late years been much in contact with English agriculture can have failed to observe two things:—

1. That the existing generation of tenant-farmers are, from an educational point of view, in a far better position than were their forefathers, that is to say, they have been brought up at better schools; the necessity of a training for their business has been better understood; and they are more able and willing than their fathers were to avail themselves of the sources of information around them.

2. That the agricultural community are, generally, far more alive to the advantages of this special training than they used to be, and have a far more acute perception of the position of English agriculture, in comparison with that of foreign countries, than was possible among farmers even thirty years ago.

As a natural consequence those County Councils which represent rural districts, and therefore depend to a great extent for their support on the farmers, are frequently found able and willing to spend large sums with a view to disseminating among the agricultural community information relating to the latest results of science as applied to agriculture. Another factor which has come into play is the value set upon education by the labouring classes, which has been one of the results of the Education Acts following on the Reform Bill of 1867. The spread of education among the children of the working classes in rural districts has naturally enlarged their horizon, and given them a far wider appreciation of their opportunities in life. To those who look at this question simply as one affecting the rise of wages and the supply of agricultural labour, this result may have an unfavourable aspect. But, on the other hand, there will be few who will not rejoice that, owing to the fact that a large portion of the work which used to be done upon the land by human labour is now achieved by mechanical means, the life of the agricultural labourer is by no means so monotonous and devoid of intellectual effort as it was when wages were much lower. There is, however, one point which is not often considered in connection with the so-called migration to towns, namely, that it is practically impossible for more than about one-third of the sons of the agricultural labourers to follow the same employment as their fathers, because the labour required to be done upon the land is decreasing, and with the improvement of labour-saving machinery will probably continue to do so.

But whatever opinion may be entertained as to the effect which the progress of education has had upon the agricultural community during the last thirty years, there will probably be

out one feeling with regard to the efforts that have recently been made in various quarters to render the instruction given in rural districts, both in the elementary and in the secondary schools, more adaptable than at present to the needs of the inhabitants of such districts. There seems to be fair ground for complaint that no distinction whatever has been made between the needs and capabilities of urban and those of rural districts, either with respect to the course of study, the system of instruction, or the training of teachers for the elementary schools.

Those who have been responsible for producing and working the education code do not seem to have allowed for the difference between the lighted streets, dry pavements, and short distances to and from schools of a town, and the dark muddy lanes, wet footpaths, and long distances which school-children must travel in a country district. The Education Department has not even been able to see its way to encourage such a simple arrangement as the employment of vans to take children from distant hamlets and scattered cottages to a central parish school, so that they may arrive fresh and dry-footed. How, then, can it be expected to trouble itself about the much more difficult adaptation of all the items of a code to these varied circumstances—items which are not less important to the future of the children than the other details of their school days?

While such is the state of things with regard to the education of the children of the labourer in rural districts, the parents of those who will be farmers and farmers' wives in the next generation, have ample reason to complain that no attempt has been made as yet to establish an organised system of education for their children. They are left to take their chance, without any guidance, as to the character of the schools available for them. No guarantee is afforded that the teachers in those schools shall be even as well trained as the teachers in the schools which their labourers' children attend.

Except by a fortuitous distribution there is no gradation of schools adapted to their needs. But those who are interested in maintaining English agriculture in its proper position in the world have of late had the satisfaction of reading reports of meetings and discussions, which prove that the importance of such a subject as the education of all classes connected with agriculture is beginning to be more widely appreciated.* Let us

* In the Note Book Section of this 'Journal,' pages 189-193, there will be found some particulars respecting the steps that have been already taken by a Committee recently formed for the promotion of Agricultural Education in the rural districts, more especially by providing instruction at elementary and other schools in subjects bearing directly upon rural life.—Ed.

consider then what are the points which most require attention with regard to it. Probably no division of them is better than the natural one, namely, those which concern the children of the employers, and those which concern the children of the employed.

It may be assumed that the time available for the schooling of those who are likely to become employers of agricultural labour will not exceed ten years, namely, from six to sixteen, and that their homes will for the most part be agricultural homes; so that when they are not at school they will be in the midst of farming operations, conducted by experienced and more or less skilled farmers and farmers' wives. With regard to the other class it may be assumed that the time available for them is probably two or three years shorter; but, on the other hand, they will be living, during their school days as well as when they are at home, in the midst of agricultural operations, carried on by experienced and more or less skilled labourers. But in their case there is this further consideration, which is by no means unimportant, that their parents have enjoyed fewer educational advantages, and have been even more limited in their experience, than the parents of the former class. It is, however, clear that the children of the employers and the employed alike have all around them in their everyday life ample opportunities of using their faculties for the acquirement of experiences which may serve to illustrate what should be taught them when they are at school.

These considerations suggest that in neither case need the instruction in schools be of a directly practical character, the limited time available for schooling being better spent in teaching the pupils to observe accurately and reason correctly upon those facts of Nature with which they will later on have to deal, than in attempting to impart a smattering of what is erroneously called science. In the case of children coming from homes where the parents have enjoyed comparatively few educational advantages, it is hopeless to expect that in the limited time available for their instruction their minds can be sufficiently trained to enable them really to understand and grasp even the rudiments of anything that can truly be termed science. But it is by no means hopeless to attempt to train them in accurate observation and reasoning, and this can probably be best done by stimulating to the utmost their interest in the marvels and the beauty of the habits and growth of the plants and animals among which they live. It is by no means hopeless to endeavour to teach them to consider the operation of those mechanical and other laws of Nature which have a material bearing upon agriculture. It is by no means hopeless to put them, by careful grounding, in a position to continue

their own education when their school-time has come to an end. These, beyond all doubt, are the objects to which the efforts of those who desire to improve agricultural education should be strenuously directed.

Now, it is obvious that, with regard to both classes of pupils, the first requisite is a properly trained staff of instructors, and in connection with this there is one principle which cannot too carefully be borne in mind, viz.: *that the more slender the mental equipment of the pupil, the more absolutely essential is the thorough mastery of the subject by the teacher.* This principle is, unfortunately, in direct opposition to the course pursued by the Education Department, which by means of examinations, &c., encourages the teachers of elementary schools to strive for certificates in half-a-dozen or more different sciences. It would be far more to the purpose to take care that the teachers were thoroughly grounded in the elements of mechanics, organic chemistry, the botany of agricultural plants, the physiology of agricultural animals, and the life history of various insects, &c. Even this limitation would probably include more than the majority of teachers could adequately supply. But with teachers so trained, and with some additional strictness in the regulations affecting rural schools, one might truly hope that the instruction of the children of the labouring classes might be left to take care of itself, superintended as it would be by an admirably trained staff of inspectors, who are by no means deficient in the perception of what is required and what should be expected.

When we turn to the other class, which has to be trained to do the work of others as well as to work with their own hands, there is much more that requires consideration.

1) To begin with, as has been already said, the period of school time is considerably longer.

2) The power of leaving home for school purposes is greater.

3) The number of subjects, whether scientific or practical, which an intelligent appreciation of the knowledge already acquired can be brought to bear is larger.

On the other hand, (4) we have as yet no trained teachers, and no inspected schools for this class. As the period of school time is admittedly longer, the process of education ought to be more gradual, and if, as is sometimes the case, parents are not fit to commence the education of children at a parish school, taking advantage of free education for the grounding in the three Rs, &c., such children ought not to be left at that school till they reach the higher standards, but should be removed early to the school where it is intended that their education shall be completed. This should be specially

emphasised in view of the fact that there is an impression, far too widely spread, among farmers that a year at a secondary school is amply sufficient. To act upon this impression is—it is not going too far to say—a mere throwing away of time and money.

The farmer himself should be the first to realise the great variety of subjects which his son must be prepared to deal with, if he, in his turn, is to grapple successfully with foreign competition, which certainly will be no less in years to come. It is absolutely necessary then that a sufficient time should be allowed for his teachers to give him at least such a ground-work as he may be able to build upon in after years. I do not for one moment desire to imply that anything like advanced science should be taught to boys who are going to be farmers. But there can be no question whatever that an intelligent appreciation of the great laws which lie at the bottom of those sciences which deal with subjects that farmers ought to be familiar with, will be of increasing value to him who during his school days has had the inestimable advantage of acquiring such knowledge. Some say that an acquaintance with the elements only of science is of no practical value to farmers, and that if science is taught at all, it ought to be carried much further than this. To these arguments there is a conclusive answer, namely, that the appreciation of the elements of a science enables one to gain far more from reading and observation than one otherwise could. If, on the other hand, the attempt is made to push forward into advanced science one who, from the circumstances of his life, cannot afterwards carry on his education or continue his study, he will inevitably, in the course of a very short time, realise that the advance which has taken place since he discontinued his studies has left him very far behind. Hence, he either loses confidence in the results of his work, or from over-confidence finds himself in the wrong.

Turning now to the second of the points mentioned above, the farmer can usually send his boy either as a day pupil or a boarder to some secondary school at no great distance from his home. But he has at present nothing to guide him as to the character of these institutions but what he can casually pick up from his neighbours. And this fact gives immense importance to the increase of interest in secondary education, of which mention has been already made. One of the first steps which legislation should take should be the institution of a *register of teachers with their qualifications*, and this should be followed by a system of *inspection by public officers of all secondary schools*, that is to say, of all schools desiring to attract children of farmers, tradesmen, and professional men.

The agriculturist who recognises the shortcomings of the present system will do well to promote the achievement of these two objects, and to help to form public opinion as to the necessity of their being early undertaken. They are both of equal practical importance to all occupiers of farms, who have children to educate.

With respect to the third point—the number of subjects which have to be mastered—the farmer can do much by encouraging the County Council or other educational authority in his district to provide travelling instructors of the utmost efficiency. In this way courses of instruction can be conducted at various groups of secondary and also of primary schools, so that by division of labour the teaching in the various subjects may be made as perfect as possible.

Enough has been said in this connection to demonstrate the importance of the members of the agricultural community taking an earnest and active interest in the legislation which we have reason shortly to expect with regard to secondary education. But there is one other point upon which, before closing, a few words should be said. And that is, the extreme importance of encouraging the establishment in every village school of an evening or continuation class. These classes, it may be thankfully remembered, are already increasing, under the technical education grants; but we ought not to be satisfied till there exists in every parish the opportunity for those among the labouring classes, or among the farmers' families, who have the energy and the good sense to desire it, to continue their education to the latest possible moment. There are many who would have recourse to a teacher, whether resident or travelling, for the purpose either of keeping themselves abreast, as far as may be, with the times, or in order to perfect themselves by instruction and practice in such subjects as mensuration, arithmetic, mechanics, geography, or even history, in which they may not have been satisfied with the progress that they had been able to make before they were compelled to leave school.

How hopeless must be the feeling of one who is endeavouring to demonstrate some simple scientific formula or fact, when he finds it necessary to explain to the class, or perhaps to one or two members of it, what is meant by decimal fractions; and what chance is there of a lad getting anything from the best possible teacher of botany, or of the anatomy of farm animals, if he cannot even read a simple book, or spell ordinary words? And yet we all know perfectly well that, as things are, such occurrences must be matters of daily experience.

Our agricultural contemporaries on the Continent and in

America have long been far wider awake than we are with respect to this subject, and have made attendance at continuation schools compulsory up to the age of fifteen or sixteen. They have so arranged their school times, that the children of both classes, to their own great advantage and the advantage of their parents and employers, are more available for farm, field, or garden work during the summer than is possible under our system; while during the winter months, when the evenings are long and the days are short, more time is devoted to schooling.

In some countries on the Continent of Europe the masters are encouraged to take an interest in all subjects connected with gardening, agriculture, and arboriculture, and to afford opportunities for the boys in the intervals between their lessons to pick up for themselves, with the help of the teacher, the best methods of grafting, pruning, &c. They take the boys out for walks and encourage them to collect insects and plants, in whose several characteristics they instruct them. The boys are also taught to draw, and to work from their own drawings, thus acquiring accuracy of eye, careful observation, and correct manipulation. Girls are taught cookery, nursing, and plain needlework, and for all this the evening continuation class affords an immense increase of time and opportunity.

But when all is said and done, the first and most indispensable requisite for the progress and prosperity of English agriculture is an adequate and accessible supply of cheap, practical, and efficient secondary day schools. These should be set up in every market town, and no grant of public money or scholarships should be made to any school which employs an unregistered teacher. Periodical inspection by public officers, not only for sanitary but also for educational purposes, should be strictly enforced. Travelling teachers, who should take various branches of scientific instruction, should be supplied for groups of these schools, and to a certain number of these schools a sufficient amount of land should be attached to provide opportunities for experiments and illustrations of the results of agricultural research. Such a proposal may strike some of my readers as theoretical and expensive, but they may rely upon it that money spent in this way will be invested to the very best possible advantage, and year by year will be more fruitful in its effects. The carrying out of such a programme as this is needed to put us abreast of foreign countries, and it would be a practical application of that axiom which of all others it is most essential that our farmers should bear in mind—never be contented with what is second-rate in anything. Always aim at the best, for nothing short of the best will pay.

VII.—*The Production of New Breeds of Farm Plants.*

By WM. GEO. RATTRAY, Edinburgh.

The object of this article is to furnish a *résumé* of the various methods which have been followed and worked out in detail within the last twenty years by Messrs. R. and J. Garton, of Newton-le-Willows, Lancashire, in the production of their new types or breeds of cereals, and other farm crops such as the clovers and grasses.

The work has been accomplished—firstly, by means of cross fertilisation, that is, by the judicious crossing of the respective species of plants selected for this operation; secondly, by selection from the results thus obtained; and, lastly, by permanently fixing the improved outstanding characteristics which have thus been produced. In order to understand and appreciate the breeder's art, it is necessary to know something of the various component parts of a typical flower. The special function of the flower of any plant is to produce seed, and it is to this purpose that the stamens and carpels—or, in other words, the male and female organs—of the plant are specially devoted. Seed cannot be formed without them, hence they are called the essential or necessary organs of the flower.

If we examine the flower, say, of a bean or a pea, we shall find at its base a greenish, cup-like structure, and this is known as the calyx. It is composed of leaves called sepals, which in this case are all united. Next in order comes the gay coloured part of the flower, known as the corolla, and made up of five fine petals. Still further inwards are the stamens, ten in number, nine of them being joined into a tube by their filaments or stalks, the remaining one being free. In the centre of the flower is the pistil, consisting of a solitary carpel, which is the young pod, within which the little ovules, ultimately destined to become seed, are developed. Thus, it will be seen, an ordinary flower consists of modified leaves which, as sepals, petals, stamens, and carpels, make up what, in botanical language, is known as the floral whorls; the two outer whorls, consisting of the calyx and the corolla, forming the protecting envelopes of the flower.

All British leguminous plants, such as clovers, vetches, beans, peas, &c., have the *Papilionaceous* (Lat. *Papilio*, a butterfly), or butterfly-shaped corolla. In clover blossoms the corolla is on a much smaller scale than it is in the case of the bean or pea, the small flowers of the clover being gathered into a head. The stamen or male organ consists of a stalk with a knob at its free end, the stalk being called the filament and the knob the anther. The anther, the part which most concerns us, is

composed of two similar parts, called the anther lobes. At a certain stage in its blooming the flower sheds pollen dust, which, when examined under the microscope, will be seen to consist of a large number of delicate plant cells, these being the male fertilising material of the flower. The carpels forming the innermost portion of the floral whorl, in the great majority of flowers, grow together, the united structure being known as the pistil. In the case of the bean and pea flower, and, in fact, in that of all legumes, the carpel is a solitary one, the ovules being contained in an elongated ovary, which is surmounted by an insignificant style and stigma. The most important parts of the female organs are the ovules, formed by the carpel leaf in a definite and characteristic manner; the ovules on one margin alternating with those of the other, as may be seen on examining the ovules (seed) in the ripe pod. It is the ovules which, after fertilisation, develop into ripe seed; but, before this change can be effected, pollination must take place, that is, pollen has to be conveyed from the stamen to the receptive surface of the stigma, this being a necessary preliminary to fertilisation. The stigma can, however, only make use of the pollen when it is ready for it, and this stage is not generally reached until the flower is in bloom. The usually sticky, or, in some varieties of plants, hairy, surface of the stigma, keeps the pollen grain in position during its germination. The inner wall of the pollen grain protrudes through the outer surface and grows, forming a pollen tube; but with the view of securing the passage of the pollen grain to the stigmatic surface of the flower a variety of contrivances have been devised by Nature, so as to ensure that the pollen of one flower will always arrive at the stigma of another flower of the same species. As a rule, pollination is not accomplished without aid from some source or another. Not unfrequently, this absolutely necessary service is rendered through the agency of the wind, and sometimes through that of birds or insects. Humming birds in tropical South America are specially active as vehicles in the distribution of pollen, and not a few plants by the peculiarly unnatural colour of their flowers, combined with a strong carrion-like stench, induce carrion insects to visit them and deposit their eggs, and by so doing they effect the pollination of the flower so favoured.

Plants which are pollinated by the wind are termed by the botanist *Anemophilous*, and they possess distinctive features. They always produce their pollen in large quantities, and it is easily shaken out of the anthers by the wind and scattered about.

The question may be asked, How is it that new simple crosses are not produced on all hands in the ordinary course of

natural events? Simply because, as has been discovered within comparatively recent years, many of the so-called wind-fertilised plants, such as our cultivated grasses and cereals, are self-fertilised with their own pollen before opening and expanding their spikelets. Of course it has long been believed that at the time of flowering the two little scales, called lodicules, were responsible for the opening or expanding of the paleæ and glumes by becoming swollen and thus bringing about the opening of the flowers. The hybrid breeders' practice, however, shows that this phenomena only takes place after self-fertilisation has been accomplished, and when this is not the case the flower remains closed to all intents and purposes. Here Man steps in to direct Nature when he desires to improve the old or produce new breeds.

On the other hand, the circumstances are entirely different with *entomophilous* plants, which hold out every kind of inducement for insects to pay them a visit, because it is upon their success in this important detail that their very existence as a species depends. Bees, for example, in visiting flowers in search of nectar (honey), become the unconscious medium whereby the pollen of one flower is carried to the stigma of another. Cucumbers may be taken as good examples of cultivated plants with unisexual flowers. Therefore, when they are grown in frames, the gardener has to undertake the work of the insects by dusting the female flowers with pollen from the male flowers. As has already been stated, pollen must be conveyed from the stamen to the stigmatic surface before fertilisation can take place. In the great majority of flowers, the pollen—whether it is deposited by any of the agencies just described, or whether it is extraneous pollen introduced by the would-be producer of new breeds (after having manipulated the flower and rendered it antherless by amputation)—begins to germinate on the receptive surface of the stigma and to produce a pollen-tube. This is the commencement of the actual process of fertilisation or impregnation. Of course it is of the utmost importance that extraneous pollen applied in the art of artificial crossing should be in the proper condition, neither too old nor too young. The operator with his instruments removes the pollen from the stamens of the flower selected and applies it to the stigmatic surface of the flower operated upon—in other words, the breeder undertakes to a limited extent the duties of Nature. He prevents self-fertilisation by removing the anthers at an early stage in the growth of the flower selected for manipulation, and with the guidance of knowledge and experience selects the extraneous pollen which he intends to introduce with a regard to whatever

dominating influences or qualities it carries with it, thus stamping the future seed with its potency.

The pollen-tube grows in length with greater or less rapidity in different species of plants, and in the process forces its way through the conducting tissues in the interior of the style until it reaches the ovarian cavity. It may be in the ovary that one or more ovules are found, and we can always distinguish in them certain parts, viz., a central mass of cellular tissue known as the nucellus, enclosed in either one or two coats, called by botanists the integuments, and the whole is attached to the placenta by a short stalk. The integuments, however, are not entire, as there is a minute aperture at the anterior end, termed the micropyle, through which the pollen-tube can enter in order to reach the embryo sac, which is within the tissues of the nucellus. The necessity for the pollen-tube to reach the embryo sac, so that the contents of the former may be brought in contact with the contents of the latter, now becomes evident. The result of impregnation is that inside the embryo sac an embryo begins to form, and at the same time the fertilised ovule increases in size until finally, with the contained embryo, and occasionally with some reserve food material in addition, it forms what is called a ripe seed.

It might be thought that, since in most flowering plants the stamens are so closely related in position to the carpels, it would be a relatively easy matter for pollen to fall on the stigma and fertilise the ovules of its own flower. But this rarely happens, although barley and some of the grasses furnish examples where such a thing does take place, for it is known that they are persistently self-pollinated without the species seeming to suffer deterioration from this *in and in breeding*. Here it is that Nature plays into the hands of the producer of new breeds, and Messrs. Garton have been able to change a two-rowed into a six-rowed barley with all the characters of a first-class malting variety. They have also combined the good qualities of many of our forage plants and the best of our grasses in one and the same plant of its respective kind.

An infinite number of new and distinct breeds of oats, barley, wheat, clovers, grasses and roots have been produced by a dexterous manipulation of the flowers before they have pollinated themselves. The operator, by introducing well selected extraneous pollen with his instruments, has succeeded in producing new types or breeds permanent in character, luxuriant in habit, and producing seed capable of reproducing itself in abundance under the ordinary observed rules of cultivation. In some flowers this self-fertilisation is prevented

by mechanical means, the respective lengths or positions of the involved organs being unsuitable. Again, in unisexual flowers—those containing stamens only or carpels only—self-fertilisation can never take place, and in not a few instances the stamens and carpels of the same flower do not ripen at the same time. The union of two sexual cells in the act of impregnation is, as a rule, only possible when they are derived from closely related parents, for it is only then that they exercise what may be called an attractive influence upon each other, resulting in a fusing together in the act of sexual reproduction. Such a union is known as hybridisation, and its products as hybrids. It also proves that the real purpose of the sexual union in the plant is the combination of the dominating properties of both parents; but it is seldom that the hybrid resembles one ancestor almost exclusively. Hence it becomes clear that the inherited characteristics of both the male and female cells are transmitted by sexual reproduction to the hybrid. Derivative hybrids arise when hybrids are again crossed with one another, or with one of the original parent forms. By this means it is possible to unite six species into one hybrid, and this is what the breeder terms composite or compound crossing. In addition to this inherited quality, hybrids exhibit new peculiarities of growth not derived from their parent forms, including a tendency to variability which is greatly enhanced in some hybrids, especially in those arising from the hybridisation of different varieties of the same species. Those from nearly related parents produce more vigorous vegetative growth, they bloom earlier, and are more prolific altogether than the uncrossed plant. The luxuriance and the increased tendency to produce new varieties, types, or breeds displayed by hybrids has made the whole subject of hybridisation one of great practical and commercial value both to the farmer and the seedsman.

The plastic nature of the plant habit having been explained, we come now to the consideration of the breeders' art. It would serve no useful purpose to produce new breeds of agricultural crops which were not highly endowed with the power of producing, under ordinary conditions of cultivation, an abundant supply of germinating seed—a cheap germinating seed being one of the first essentials of all our farm crops. It must, however, be borne in mind that plants vary much with respect to the amount of seed which they ultimately bring to maturity. It is not their habit to produce a large quantity of useless seed, but rather to mature a few seeds and leave the remainder undeveloped or in a rudimentary state. An annual-plant produces seed and there its duties end, while a perennial-plant,

on the other hand, only does so when atmospheric influences and surrounding conditions are favourable.

But, under the influence of the breeders' properly-selected extraneous pollen, improvements are produced, the plants sporting freely under the introduction of what might be termed new vitality. In short, the method of composite crossing, when followed, is sure to produce from fixed types new breeds which are better than the original parent plants. Again, it becomes evident that the producer of new breeds in the vegetable kingdom must assure himself that he is quite able to control and correct defects in the respective plants which he has taken in hand—that is, that he can diminish or increase vegetative luxuriance, or that he can increase the number of flowers which produce perfect seeds, and, if required, transform the sterile nature into the prolific.

With these objects in view, Messrs. Garton have, from time to time, procured samples of every known variety of cereal seed distributed over the face of the earth, both cultivated and uncultivated, every one of which has been grown, and its respective peculiarities observed and investigated through several generations. By judiciously incorporating the dominating influences exhibited by the respective pollens they have succeeded in producing varieties of wheat, second to none now in the market, the average weight of grain being 60 per cent. heavier than that of wheat in ordinary cultivation. With oats they have been even more successful, having already produced varieties which have yielded from 30 to 40 per cent. more per acre than ordinary varieties. Further, both oats and barley have been secured which are suitable for sowing either in the spring or autumn.

The next point for consideration is—how does the breeder of new varieties proceed to fix the permanent outstanding qualities of the breeds which he has called into existence by his art? We will assume that, as the result of the first year's work, he has been successful in crossing the flowers of a plant with extraneous pollen which has duly matured its seed. By merely inspecting these seeds no one could tell that there was hidden away within them a dominating potency resulting from the application of specially selected pollen used in their formation.

In the second year, the first progeny of the cross is sown out in spring under suitable conditions, and harvested in due course. All the seeds, it will be seen, are different, each plant producing its own special kind of seed, this being the result of the infused new vitality. In other words, it means that the first progeny of the crossed plants are sportive. However,

the seed is gathered from each individual plant and kept separate.

In the third year, in order to keep the work within due bounds, equal samples of seed, representing each of the individual plants of the first progeny, are taken and mixed, and then sown out in single rows, but sufficiently apart to allow of selection taking place when the plants mature; all the plants are visibly sporting, as evinced by the numerous variations. No selection, however, is made until harvest, when those individual plants which show evident character in the wrong direction are removed and thrown aside. On the other hand, plants showing the greatest amount of reaction in the direction desired are selected, the resulting seed being thoroughly examined, and all small seeds removed. This is the second progeny of the cross.

The fourth year the seed is again sown out in rows after having been thoroughly mixed, and, as before, the plants are still found to be visibly sporting. No one can tell what the ultimate result will be; but, when harvest arrives, evident deteriorations are again thrown out, and those plants alone are kept which exhibit the combined qualities and improvements desired. The resulting seeds of each plant are now harvested and kept separate. This is the third progeny of the cross.

In the fifth year the separate parcels of seed, the produce of the previous year's crop, are sown out, but the contents of each part set is confined to its own row, and, as the crop matures, it will be seen that in some of the rows all the plants are identical in their habit of growth, and the resulting seeds are similar. Thus each row of similar plants represents a new fixed type, and it follows that the individual plant which produced the parcel of seed must have been fixed the previous year; but this, of course, could not be determined until the seed had been sown and matured. This is the fourth progeny of the cross.

The proof of fixity of character is that the progeny from that seed repeats and reproduces in all respects the characters of the parent which gave it birth. Having thus far procured the fixed types, it is on their respective merits that they are judged, and only those are selected and preserved which show the greatest amount of the desired improvement.

We have now arrived at that stage where the problem of derivative or composite crossing engages attention, for the solution of it renders it possible to combine six species or even more into one hybrid. The mere fact that fixity of character and conformation of plant and seed have been obtained within such a comparatively short time is an indication that the reaction of the extraneous pollen applied in the production of a simple cross has been comparatively slight, and that the new

RATTRAY on the Production of New Breeds of Farm Plants.

es, although improved and invigorated, are not so widely divergent from their original ancestors as they can yet be made adopting the following methods.

We begin operations with simple fixed crosses, which for convenience we will represent by $A + B$, $C + D$, and $E + F$.

In the first year the seed of these simple fixed crosses are sown out in three rows, and when the plants are sufficiently matured for cross fertilisation, the operator proceeds to pollinate the plants produced by $C + D$ with selected pollen from the plants represented by $A + B$. In due time the seed is matured and harvested; this is the second cross.

In the second year all the seed produced the previous year is sown out, suitable precautions being observed for the favourable development of the crop, but it is noticed as the plants develop that some of them are inclined to show variations and abnormality in a marked degree. However, seeds are only taken from those plants which show variations in a favourable direction, and these seeds are duly harvested from each individual plant chosen and kept separate. This is the first progeny of the second cross.

In the third year the seed of the respective parcels collected from the chosen plants of the previous year are sown out in distinct rows, and as the plants grow up some of the rows show variety of character—that is, the individual plants composing each row resemble each other in general conformation. The seeds of the best fixed types only are collected and preserved from distinct parcels. This is the second progeny of the second cross. One of the great advantages of composite crossing lies in the fact that it is a direct means of securing rapid fixation; indeed, in certain instances, fixity of character can hardly be secured otherwise.

In the fourth year the seed is sown of a fixed secondary cross, $(A + B) + (C + D)$ and also the seed of $(E + F)$. Then the operator makes a cross with pollen selected from the combined seeds $A + B + C + D$ on $E + F$, in order to secure the desired compound of character. After the seed containing this blend is matured it is harvested. This makes the third cross.

The following year, viz. the fifth, the seed is sown out in a single row, and as the plants slowly reach maturity it is observed that they are showing sportive characters. In due time the resulting seed is harvested, and this is the first progeny of the third cross.

In the sixth year, the mixed seed, the result of the previous year's crop, is sown out, and as it advances towards maturity the sportive effort is still visible in the progeny, but the tendency to extreme abnormality is beginning to wear out. At

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harvest seed is selected from the best plants only a separate, each plant having its own respective parcel This is the second progeny of the third cross.

In the seventh year the seed is sown in distinct rows each of the parcels produced by the previous generation when the plants have again sufficiently matured it is evident that in some rows fixity of character is quite while in others the sportive tendency is still at work. the third progeny of the third cross. In the seed now secured we have new and fixed types or types in which the respective characters of six given varieties have been blended and combined by the process of crossing, selection and fixing.

In the breeder's practice hundreds of new varieties are produced, and out of these there may be found one dozen, or less, first-class plants. These are the new breeds which quite fit (with all their advantages of early maturity, resistance, luxuriance of growth, and prolific seed production of good quality) to enter and take the first place in the rank and file of our cultivated crops.

Having now explained the system in detail, it only remains to indicate a few of the many advantages thus obtained. For example, one of the chief complaints of our millers is that English-grown wheat does not contain sufficient gluten, and thus fails to produce what might be termed a perfect loaf. They are, consequently, compelled to use a large proportion of foreign wheat at an enhanced value. Messrs. Garton discovered that this defect can be remedied by using as a parent an indigenous wild wheat, *Triticum spelta*, of Southern origin, possessing dominating qualities which, when incorporated with the home cultivated varieties, are of great value. The influence of these wheats has been stimulated to ripen earlier, whilst it has also greatly increased their strength and richness of gluten. Added to this, the liability of them to shed out during harvest and high winds has been overcome. Thus, from what is practically a weed in its native climes, these valuable properties have been procured and introduced into our home-grown varieties, and its influence has rendered it possible to grow wheat in this country as good as, if not better than, the finest imported samples. Further, through the introduction of an indigenous weed from China, known as the Chinese grass, our cultivated varieties of oats have been much improved. This wild oat has the peculiarity of producing its grain without a husk, being protected only by a covering of chaff which retains the grain and prevents shedding when matured, and is also a prolific producer of seed. By incorporating these

teristics with the cultivated varieties new prolific breeds have been produced, in which the grain matures without a husk, and produces a heavier yield per acre than the ordinary cultivated varieties do with grain and husk combined.

Several species of wild oats have been employed, and the additional vigour they have imparted to the progeny has been of great advantage. The aversion to each other of respective species which it was desired to cross has also been broken down.

Six-rowed barley of excellent quality and great yielding power has been produced by crossing two of the common two-rowed forms, thus stimulating the unfertile florets to mature and produce seed.

In the production of new breeds of grasses and clovers the results have been all that could be wished. The combination of rye-grass with fescue has resulted in the production of numerous hybrids possessing all the unique feeding value of the former, coupled with the perennial character of the latter. Likewise new breeds of clover have been produced, perennial in character, through the influence of infusing the indigenous red clover with the broad-leaved red, the progeny of which will be highly appreciated where it is difficult to procure a satisfactory crop of clover. The combination of the common field turnip with the swede has resulted in the production of new breeds, possessing the earliness of the former with the superior quality of the latter; whilst by incorporating the mangel-wurzel with the beet, new breeds, particularly rich in saccharine compounds have resulted.

VIII.—*Notes on Basic Slag*. By the Honourable H. B. T. STRANGWAYS.

"I DON'T see what good that can do. Why, it is just like peppering the ground." So said a Sedgmoor farmer to me after he had seen my men sowing slag broadcast on one of my fields in Sedgmoor. However, after observing the effect on my land, and hearing another Sedgmoor farmer who had bought the grass of the field complain that he had too much of it, he determined to try it. In the following summer I saw him again, and asked him the result. Said he, "Wonderful, I can't keep my sheep and cattle off the land that I slagged; they won't feed on the other part of the ground." I asked him, "Have you tried the slag anywhere else?" "Yes," he said; "tried it on onions, and never had such a crop before; and I tried it on

ages, but won't do that again, for it burnt them all." This farmer is now a firm believer in slag for r, and several other Sedgmoor farmers are now using , and all are well satisfied with the results.

my own experiments: I purchased four tons of the spring of 1893, 30 to 35 per cent. of phos- ing guaranteed, and proceeded to try a large number iments on a small scale, and on several varieties My plan was to have half an acre paced out some- the centre and sometimes in a corner of a grass field, ; (2½ cwt.) of slag thrown broadcast over each of the arked places. After the slag had been spread, the re removed. The effect was most visible on peat land. s no occasion to ask where the slag had been spread; rance of the ground, and the fact that the sheep and re nearly always to be found on the slagged piece, at ted out the place.

meadow of clay loam the effect could be seen from the the yield of hay was conspicuously increased. This been treated in 1895, and a few days ago, whilst at the gate, the green appearance of the slagged piece here the slag had been put, and the yield of hay this still much larger than that in the rest of the field. In

year I had part of a field on the main road between ury and Bridgwater slagged. This field was divided s into "bens," and three of these "bens" were

People who had driven along the road used to what made those three "bens" look so much better rest of the field, and were surprised when I replied,

tried slag in different fields all over the parish, and ase but one the effect has been most marked. In only was no result perceptible, and this was on a very stiff

the slag does good in almost all cases, it is upon the s in the "Turfmoor" and in Sedgmoor that the result clearer than anywhere. And this I attribute to the the peat land is nearly all organic matter, and that, itly, the mineral does some good; whilst other lands benefited by some of the constituent parts of the slag. se times it does not do to waste money on costly ts, so I have been working gradually. Last year I ne of my grounds in Sedgmoor, and at the auction e grass I was well satisfied with the increase in the lised. This year I have slagged about ninety acres d in Sedgmoor, with results satisfactory to me, and to

the grass-buyers also, and I shall use more of it. Stock of all kinds appear to "do" well on land that has been slagged. I also use the slag in addition to the manure drilled with roots; but in this case it is necessary to take care not to mix the slag with other manures that may be affected by chemical action, for slag contains a considerable quantity of caustic or hot lime, and may tend to injure manures containing ammonia. To avoid this I sometimes apply the slag separately, either before or after the drilling.

As to quality: there is a great deal of rubbish in the market, and the best is the cheapest.

As to quantity: I always use about 5 cwt. to the acre.

As to time of applying: I apply it to grass land as soon after the winter rains as I can get on the land. After grass land has been slagged, stock must not be put on it until it has been washed by rain.

As to lasting quality: my present experience is that the effect lasts for about three years. In valuing for unexhausted manure to an out-going tenant, I think that if you allow on the basis of two-fifths of the cost for the first year, another two-fifths for the second year, and one-fifth only for the third year, that would be about right. It would, however, be necessary to know what the actual quality of the slag was; as for some of the slag sold, no allowance at all should be made.

As to cost: with the quality of slag that I use—and I buy only the best—the slag, as it lies on the ground, at the rate of 5 cwt. to the acre, costs for cash outlay from fourteen to seventeen shillings an acre, the amount varying according to the distance that it has to be hauled.

IX.—*On Cabbage-Growing in Devonshire.*

By CHARLES T. FORD.

IN Devonshire the growing of cabbage as an additional food for cattle has considerably increased in recent years. This has been mainly due to dairying having largely superseded grazing for the butcher, the profits on stall-fed beasts having been a diminishing quantity of late.

I have for several years grown from fifteen to twenty acres of cabbage, principally for cows in milk and for consumption in winter, viz., from Michaelmas to Lady Day. My experience is that no crop produces so much and such suitable food for cows in milk as cabbage, while for young stock of all kinds

nothing safer can be given; calves, ewes, lambs, lambs when rearing, and pigs, all thrive well upon it. The foundation of a good crop of cabbage is, as for all root-growing, a good fallow. The land must be properly prepared and cleaned in the preceding autumn, and ploughed with a digging plough, during dry weather if possible. Although it is supposed that a clean fallow through the winter tends to the loss, or the non-accumulation of nitrogen, which might not be the case with a catch crop, I do not think the loss is so great as the gain of having a fallow and a good tilth from a disintegration by the frosts; indeed, I doubt if it is possible to grow a good crop of cabbage in any other way.

As soon as the fallow is properly cleaned in the autumn, manure dung should be spread over it and ploughed down with a digging-plough. The dung should be carted and spread on the land during dry weather in the winter months and at once ploughed down. When this is done the land will be, in the early spring, in fine tilth and fit for drilling. My plan for several years has been to drill the seed with a turnip drill twenty inches apart, and to hoe it as in the case of mangolds or turnips. I find this costs considerably less than transplanting, and I have always succeeded in growing a better crop in this manner.

Wood-ashes, when obtainable, are excellent to drill with the seed with an equal quantity of superphosphates, about half a cartload of each to an acre. This is preferable to sowing the manure broadcast, now very commonly done, owing to the great value of this light manure in starting the young plant. Then sow broadcast nitrate of soda or sulphate of ammonia (according to the market value of each of these) just before horse-hoeing. This should be done twice, sowing one hundredweight per acre previous to each horse-hoeing.

Professor Somerville's paper on the experiments of the German Agricultural Society on Denitrification, by propounding a theory that all the money we had spent on other nitrogenous substances, when used in conjunction with dung, had been wasted, rather alarmed many farmers. Dr. Bernard Dyer, however, in his treatise on "Dung and Chemical Fertilizers," allayed that alarm; and although in one of his experiments earlier results were shown when phosphates and nitrate of soda were used alone, it would probably be found upon a closer enquiry that this was owing to the heavy dressings of London manure generally used on the land where the experiments were made not having been exhausted.

My own experience certainly goes to prove the value of dung for cabbage-growing or for any root-crop, and also the value of a

top dressing of either nitrate of soda or sulphate of ammonia. I am perfectly satisfied that the cost of such a top dressing is well repaid. On the succeeding crop the effect of sulphate of ammonia is greater than that of nitrate of soda, although on the immediate crop of cabbage I have not been able to see the difference between the two. My land is a rather stiff alluvial loam on gravel, which becomes very dry in the summer, and I find cabbages are not affected so much as turnips or even mangolds. I drill about four pounds of seed per acre. Marble Head Mammoth, Robinson Early Drumhead, and Late Purple Drumhead I have found the best sorts.

I have never grown any cabbage seed, although I think it would be well to do so, as the prices charged by seedsmen are in most cases much too high. I have, however, this year purchased some at one shilling per pound, which has turned out very well, and I have now a grand crop growing. Although the cabbage is a gross feeder, I do not think a greater or better amount of fodder of any other kind can be produced at a less cost, or any so safe for young stock especially, and, with a good dressing of dung as a foundation, I have never found any difficulty in growing a good crop of wheat, barley or clover after it.

The usual custom in this county is to sow the seed in a small seed-bed, either in the previous autumn or early spring, for transplanting and for consumption during June, July and August. I do not think that it is possible, except in a very forcing season and on very early land, to get cabbages fit for consumption before September if drilled in the spring. I have never been able to do so myself, but then I have never required my cabbage crop before September, and so have farmed accordingly. I do not think the second shoot of cabbage is of any value for feeding, and have never found stock do well upon it.

X.—*Investigations into the Manufacture of Cider. Report for 1899.* By F. J. LLOYD, F.C.S.

THE past season has not been marked by any very striking results, and much of the work done has not yet afforded a complete answer to the question which was under investigation.

THE SEASON.

The period of growth of the apple crop in 1899 was both dry and warm, there had been no frosts in the early part of the

on to destroy the blossoms, and the result was a fairly good

As will be seen from the following table, showing the average temperature, rainfall and sunshine, the weather was such as to ensure the apples being fully ripe. Thus not only the period of bright sunshine very considerably above the average, but the air temperature during the months of August and September, in which months probably the greatest development of the apple occurs, was also far above the average, in spite of the heavy rainfall of the latter month.

WEATHER REPORT, 1899.

FOR DISTRICT 8. ENGLAND, S.W.

MONTH.	Air Temperature.		Rainfall.	
	Min. and Max. Combined.	Difference from Average.	Total fall in Month.	Difference from Average.
July	46·7	-0·6	inches. 3·73	+1·48
Aug	49·6	-2·4	2·67	+0·46
Sept	61·5	+3·5	1·68	-0·51
Oct	60·1	-1·2	1·49	-1·73
November	63·4	+2·8	0·98	-2·20
December	61·2	+4·4	4·24	+0·96
January	51·0	+2·3	3·00	-0·90

BRIGHT SUNSHINE.

MONTH.	No. of Hours recorded.	Difference from Average.	Percentage of possible Duration.	Difference from Average.
July	129	- 28·3	34	- 4
Aug	164	- 34·7	39	+ 3
Sept	345	+144·5	62	+21
Oct	225	+ 50·9	51	+15
November	294	+115·8	72	+32
December	197	+ 57·0	44	+ 7
January	125	+ 30·5	42	+13

The combined result of these conditions was more marked in the composition of the apples than upon the quantity of the crop. The apples yielded not only more juice but juice of a better quality than in any former year of these observations. Thus, as regards the quantity of juice, 1,000 lbs. of apples yielded 346 lbs. of pomace and 654 lbs. of juice. This is the best recorded yield of juice since 1895, when it was first

estimated. In that year the yield was 650 lbs., while in 1897 and 1898 it was only 615, 616 and 621 lbs. respect

That the quality of this juice should be better than which has been obtained since 1893, when the experiment commenced, is remarkable. In 1895 the large volume of was of poor quality, with a specific gravity of only 1·052, the average specific gravity of the juice during the past was 1·061, which is even higher than in 1893. The following table shows approximately the composition of the juice for each year. It will be noticed that the high proportion of solids in the juice is accompanied by a small proportion of acid.

AVERAGE COMPOSITION OF JUICE FROM PRESS.

Year.	No of Samples.	Specific Gravity.	Solids.	Acid.
1893	6	1·060	14·40	·63
1894	11	1·050	11·14	·60
1895	13	1·052	12·24	·46
1896	5	1·057	14·02	·40
1897	10	1·053	13·26	·68
1898	5	1·056	13·62	·51
1899	14	1·061	15·57	·44

Thus the season of 1899 has yielded a juice of exceptional quality which ought to result in the production of excellent cider, and, so far as can be judged at the time of writing, this expectation is likely to be fulfilled.

VARIETIES OF APPLES.

Thirty-four samples of cider apples were analysed, and the results of these analyses are appended hereto. In the following table, page 95, the analyses of five varieties is compared with the analyses of the same varieties in 1897 and 1898. The most striking fact revealed by this table is that a result so favourable to one variety of apple is not so favourable to another. Thus Kingston Black, New Cadbury and Bush No. 14 apples yielded a juice of higher specific gravity in 1899 than in 1897, while the two other varieties did the reverse. Evidently the cider-maker in any attempt to improve his orchards by reducing the number of varieties of apples, such reduction is certainly greatly needed—must not overlook this important consideration.

COMPOSITION OF THE JUICE OF VARIOUS APPLES.

Name of Apple.	No.	Average weight.	Percentage of Juice.	Specific Gravity.	Solids.		Acid.	Grape Sugar.		Cane Sugar.		Tannin.		Extractions and Ash.	Grower.	District.
					per cent.	per cent.		per cent.	per cent.	per cent.	per cent.	per cent.	per cent.			
Kingston Black ..	1897	160	67	1.0606	14.86	.48	.57	10.64	3.24	.374	J. C. Waterman ..	Baltonaboro' S.				
	1898	190	53	1.0691	16.90	.57	.61	10.84	4.31	.182	Do.	Do.				
	1899	230	68	1.0657	16.64	.61	.61	11.90	2.80	.110	Do.	Do.				
	1897	163	58	1.0542	13.50	.31	.31	11.11	1.71	.264	R. W. Scott ..	Kingsbury S.				
Chisel Jersey ..	1898	214	65	1.0542	13.46	.32	.32	9.80	2.30	.244	J. H. Symes ..	Martock S.				
	1899	235	68	1.0611	15.68	.32	.32	11.90	2.80	.174	C. Osborne ..	Cadbury S.				
	1897	135	62	1.0539	12.68	.96	.96	9.06	1.68	.174	R. Neville Grenville	Butleigh S.				
New Cadbury ..	1898	206	50	1.0642	15.68	.31	.31	12.50	2.20	.232	J. F. Millard ..	Do.				
	1899	222	62	1.0601	14.00	.24	.24	8.76	3.74	.122	R. Neville Grenville	Do.				
	1897	159	68	1.0596	14.50	.30	.30	10.87	3.01	.124	J. C. Waterman ..	Baltonaboro' S.				
Red Jersey ..	1898	193	58	1.0611	14.98	.31	.31	12.04	1.85	.314	Do.	Do.				
	1899	221	68	1.0667	16.76	.28	.28	12.18	1.22	.230	R. Neville Grenville	Butleigh S.				
	1897	147	50	1.0790	20.24	.21	.21	13.18	4.94	.300	Do.	Do.				
Butleigh No. 14 ..	1898	174	50	1.0933	23.22	.40	.40	18.18	2.22	.380	Do.	Do.				
	1899	225	43	1.0925	24.92	.48	.48	18.88	4.22	.206	Do.	Do.				

VARIETIES OF APPLES TOO NUMEROUS.

The number of apples which have now been analysed at Butleigh is 254, comprising many varieties. Now it is self-evident that all these varieties cannot be equally good, that probably some are quite useless or even detrimental to the cider. Which then are the best varieties? This is the principal subject to which I wish in the future to pay special attention with a view to the cultivation of the best varieties and the gradual elimination of the others. But many observers are needed to help solve the problem, and I am anxious to excite the interest and obtain the co-operation of others in the attempt. The county of Somerset now has a teacher of horticulture, and if he and others who are in a position to do so would help in the work we might by degrees accomplish a good deal. It is necessary to discover and record for each variety:—

- 1st. Its time of ripening.
- 2nd. The weight of a crop from a single tree, year after year, so as to eliminate the fluctuations due to season.
- 3rd. The average composition of the apples.
- 4th. The kind of cider which the juice of these apples when used alone will produce.

Only by a combination of these four factors can we hope to ultimately arrive at a just estimate of the value of each variety of apple for cider-making. All past experience at Butleigh, and the information supplied by exhibitors at the Society's Show, teach us that the best cider is the produce of a judicious blend of apples. But before it is possible to carry out experiments systematically on the influence of blending, it is necessary to know the effect of each individual constituent of the blend.

A striking illustration of the value of selecting only a few varieties to blend was afforded at Butleigh in 1898. Not having then a sufficient number of apples of one variety to experiment upon, two varieties had to be blended, viz., Kingston Black and Red Jersey. The resulting cider was the best made during that season, and it kept perfectly, both in cask and in bottle, up to January 1900.

MANIPULATION.

Further experiments have been made with the thin cloths mentioned in the Report for 1897, and the results have been most satisfactory. It was doubted whether the thin cloths would withstand the pressure necessary to extract the juice, but they have been found to do this. A new cloth of deficient strength in some part may burst, but if the cloth will with-

and the pressure the first time it is used, there is little of its subsequently breaking. The apple-juice seems to tan the cloth and increase its strength. An experiment was made to determine whether the pomace were as well pressed in thin cloths as in the thick Manilla cloths gave the following results:—

Moisture in pomace from—

Thin Cloths	..	..	..	..	..	..	75.0 per cent.
Thick Cloths	..	..	..	..	..	..	74.5 „

The workmen much prefer the thin cloths. They are more easily washed and dried, much easier to handle, and the work is more quickly carried out with them more quickly than with the thick cloths.

FERMENTATION.

When examining the gases given off from fermenting cider was found at times that sulphuretted hydrogen was present. I have nearly always found this gas given off by “sick” cider, which is cider having an insipid and unpleasant taste and aroma. Whether this peculiar disease or taint in cider is due entirely to the hydrogen sulphide I have not yet determined, but it seems probable.

The cause of the gas being produced in the fermenting cider was discovered. The juice was fermenting in casks which had been “matched,” i.e. had sulphur burnt in them for an experiment, it not being usual to do this at Butleigh as it is in some districts. Sulphur when burnt is converted into an oxide (Sulphur dioxide), which the yeast, in its avidity for oxygen, decomposed, robbing it of oxygen which is partly replaced by hydrogen, thus forming sulphuretted hydrogen. This fact is of some practical importance. The object in matching cider, a custom still much in vogue, is to *prevent* fermentation. It is evident from the above statements, which have been amply proved by experiment, that unless care be taken first to obtain the cider in such a clear condition that matching is likely to prove efficacious, it will not only fail in its object, but will also destroy the quality of the cider.

EARLY-MADE CIDER.

Owing to the traditional belief that the early-made cider is ever good, I have in the past paid very little attention to this cider, in fact, have seldom started my observations until after it was made. This year I sent my assistant, Mr. W. Cook, to Butleigh earlier than usual, with the result that I have obtained some figures regarding this early-made cider,

which are certainly surprising. For instance, the average gravity of this juice was no less than 1·065, so that it have contained more sugar than the average juice of the season. Upon making inquiries I found that, owing to the preconceived notion that this early juice was of no use, it had been allowed to ferment at its own sweet will and had been almost entirely neglected. I can see no reason why, if this juice had been properly attended to, it should not have made excellent cider. I am more and more convinced that one of the chief causes of inferior cider being made is the habit of neglecting to rack the juice after once it has been put into casks.

The cider-maker who would succeed must periodically, at intervals of not more than a fortnight, go round and carefully take the gravity of the juice in every barrel, and rack accordingly. This will tell him which cask is fermenting too rapidly, and therefore which cask to rack first. Then when a cold night comes and check the fermentation, the skilful cider-maker will know at once which casks to rack, and so utilize the natural conditions which are favourable to his industry. The past season, for the reason that there were occasional severe and very cold weather, was an ideal one for cider-making, and the preceding six years it has never been possible to obtain such fermentation so thoroughly as during the past season. During these conditions were utilised with respect to the bulk of the juice, the early-made juice was neglected.

This idea about the first juice reminds me of the somewhat similar notion which I found prevalent among Cheddar cheese-makers, viz., that in the early spring good cheese could not be made. I have shown that this was due simply to the want of that warmth in the dairy which was natural in the summer, and that by artificial heat this difficulty can be overcome. It is highly probable that a similar natural cause has given rise to the popular belief that early-made apple-juice produces inferior cider. The heat at this period is generally sufficient to produce very rapid fermentation. Subsequently sufficient attention is not given to this juice, owing to all interest being concentrated upon the grinding and pressing of the main crop of apples. By the time this is finished fermentation in the first of the early juice has gone too far, and the cider is ruined. That there is something in the juice which prohibits the production of good cider I cannot believe; however, next season I shall carefully observe and prove whether or not the tradition has any foundation. I should be glad if several cider-makers would carefully observe the ferment for themselves and let me know the results, for it is at present that at present a very large quantity of apple-juice is wasted owing to this neglect.

SELECTED YEAST.

In previous Reports attention has been drawn from time to time to experiments made with pure yeasts. These yeasts had been obtained by myself from certain varieties of apples or from grapes. I was anxious to determine how far selected yeasts obtained from fruit abroad would affect the cider produced by them from the juice of English apples. I therefore wrote to Mons. G. Jacquemin, the celebrated French chemist, who has made a special study of yeasts, and asked him to send me four varieties of yeast which had been proved to yield good cider in France. He replied that he had sent my letter to the Institut La Claire, of which he is scientific adviser, and asked them to forward me certain varieties.

The "Institut La Claire" is the best known Institute (one cannot term it a factory) engaged in the production of cultures of pure yeasts, for the manufacture of wine and other fermented liquors. The Institute is situated at Le Locle, in Switzerland, at an elevation of over 3,000 feet. One of the most essential features of the preparation of pure cultures on a large scale is to ensure the purity of the atmosphere. Hence the desirability, if not necessity, of having a station at as great an altitude as possible. I who have had to work mainly in London in preparing on a small scale pure cultures of yeast, know to my loss and disappointment how immensely difficult it is to keep the cultures pure in such a contaminated atmosphere.

M. James Burmanne, the Director of the Institut, sent me four different cultures representing the pure yeasts found in the cider of the following districts: 1. Auge. 2. Orne. 3. Calvados. 4. Boncy. At the same time he wrote as follows: "Each flask of concentrated cider yeast represents one kilo of our active pure yeast. You must proceed as follows, for each flask. Take a litre of water and dissolve in it 100 grammes of sugar, 5 grammes of tartaric acid, and 5 grammes of ammonium phosphate. Boil for a quarter of an hour and then cool to 30° C. (86° F.). The yeast in one of the flasks is then added to this liquid, and the whole allowed to ferment in a large flask at a temperature of from 68° F. to 78° F. At the expiration of five or six days, when the fermentation is active, the contents may be considered to represent one kilo of active yeast."

The yeasts having been prepared in this way were next transferred to pasteurised cider, and when this was in active fermentation it was placed in a keeve. Preparations had been made to fill five keeves with juice of the same composition. Four of the keeves contained the four selected yeasts, the fifth keeve being used as a check to determine what kind

of cider would be produced by the juice without a selected yeast.

The juice from each keeve was kept separate, and, filtered, a number of bottles were filled with the cider, as in a barrel. After standing for one year, which would enable the development of flavour and aroma that might be produced by each yeast, the cider has been very carefully examined. The bottle was tasted when Mr. Brooke Hunt visited the station on behalf of the Board of Agriculture. It was thought in this way that we should obtain an opinion altogether unprejudiced, as the details of the experiment were not made known to Mr. Brooke until after the tasting and recording of opinions had taken place.

The results were as follows:—The natural juice contained no "selected" yeast had certainly produced the typical *cider*. The four selected yeasts had produced liquids which were not what we should call cider. They would indeed be far better described by the German term *Apfelwein* (apple wine). They possessed the flavour of a light Rhine wine without the alcoholic strength. It would thus appear that the selected cider yeasts which have given very satisfactory results abroad do not succeed so well when used to ferment the juice of our English apples. These results are similar to those I obtained in the past with selected yeasts of my own cultivation. Two of these were obtained from grapes and certainly produced a liquid having none of the characteristic flavour and aroma of good cider. On the other hand, I have obtained very excellent cider when the yeast selected has been taken from a variety of apple generally accredited as producing good cider. Moreover, I have found that a pure culture of yeast selected from Kingston Black apple if used to ferment the juice of other apples would produce a cider having to a certain extent the flavour and aroma of cider produced from Kingston Black apples.

We are therefore forced to the conclusion that if we desire to produce the best cider we must first seek for the best variety of yeasts to be found on the apples which we have to deal with. Moreover, it is not unlikely that the composition of the juice of the apples will so greatly affect the influence and power of the selected yeast that a yeast which would give the best results with the juice of the apples of Somerset might not give equally good results either with Herefordshire apples or Devon apples. Thus the further study of the problems of cider-making opens up a field of investigation far wider than has been anticipated in the past.

The cultivation of these pure yeasts upon a sufficient scale will enable experiments to be carried out in all three counties and would not necessitate a much greater outlay than would

required for the cultivation of the yeasts for one county only. But the expense must be greater even for the county of Somerset than these experiments have hitherto entailed, and unless this expense can be met either by the Bath and West Society, or by the combined action of the three counties of Devon, Hereford, and Somerset, or by the Board of Agriculture, I fail to see how any further development of this work at Butleigh with pure selected yeasts is likely to benefit the cider-makers of the country generally. Mr. Neville Grenville and myself have from the commencement had this one object in view only, and it is therefore our duty to make known the facts and for cider-makers to determine what is the best course to be adopted in the future. Undoubtedly a far better cider can be produced by the employment of a selected yeast than by the uncontrolled miscellaneous fermentation which is now mainly relied upon to produce cider.

OILY CIDER.

I now have to record the appearance last year of the first difficulty which has arisen during the period of these experiments. It was that a large quantity of cider in bottle became thick, so that it would pour out like oil, yet not so thick as to be what is termed in milk rosey. Hence we have termed it oily cider, though undoubtedly it is a species of ropiness. The substances formed in the cider which give it this thick character are known to scientific men as mannite and gum, and are produced out of sugar. Hence, the greater the proportion of sugar in the liquid the greater the quantity of these two substances which may be produced. As cider is usually filtered and bottled when it has a sp. gr. of 1.015 to 1.020, it contains far more sugar than the cider which is kept in cask, which is generally filtered only after the sp. gr. has fallen to 1.010. Therefore, it is in bottled cider that the trouble is most marked, and this was the case at Butleigh. When the same cider has been partly bottled and partly left in cask, that in bottle has been distinctly oily, while that in cask has shown no oily tendency. This oily cider was first noticed in July last, and since then has been the subject of considerable study, but the results are not as yet complete. The three questions which I had to try and solve were, (1) what is the cause of this oily cider, (2) how does the cause get into the cider, and (3) can the oily nature be cured?

Pasteur found that some oily or viscous wine was caused by a bacterium, which, as it consisted of little spheres having the habit of growing in chains, we should term a streptococcus.

In many samples of oily cider, even after the most careful examination, I have been unable to find any streptococci or even cocci, so that in cider the change appears to be due to some other organism. I believe it to be caused by a bacillus which has been found in every sample examined, and which in due course will be fully studied.

That it is due to some living cause is well shown by the following experiment. The sediment from a bottle of oily cider was collected and placed in a bottle of good cider. Two months after this cider had become oily. I mention this experiment because it shows how very necessary it is, when any trouble arises, to completely destroy, and not to leave in or even near the cider-house, that living bacterial matter which, in the form of sediment in bottle or cask, may, if disseminated, cause a veritable epidemic of the complaint to which it can give rise.

Putting aside for the present further consideration of what is the nature of the organism which produces this oily cider, we come to the second problem, how did it get into the cider? The numerous suggested origins of the trouble have been tested one by one with all the care and thoroughness possible, and yet we are not in a position to say definitely whence it comes. Let me give some illustrations of the work which this has entailed. The oily cider was first markedly noticed in some which had been blended to obtain a liquid specially suited for bottling. For the purpose of this blending, Mr. Neville Grenville had obtained some large barrels which, after being most thoroughly cleaned, were well waxed with paraffin. Was it the paraffin, was it the new barrels, or was it a constituent of the blend which had caused the oiliness? Experiments were made with paraffin in fermenting apple-juice and in old cider. Neither had any effect on the paraffin, nor did the paraffin affect the cider. The history of the barrels was most carefully investigated, and it was found that they had not previously contained oily cider, or cider which subsequently became oily. Nor could any evidence be obtained to show that it was due to the blending. Subsequently two very oily samples were discovered, neither of which had been near paraffin, nor in new casks, nor blended, thus finally disposing of our three assumptions. This evidence could not have been procured were it not for the very elaborate records which are now kept at Butleigh. To keep these records and to make the analyses which they demand is nearly sufficient to fully occupy the time of my assistant, so that most of the laboratory experiments have to be made at some other period.

Some blends which contained small cider were oily, and it was thought to be due to the small cider, but this hypothesis was found to be untenable. The cider is bottled at Butleigh in

screw-stoppered bottles, and I thought it might be due to bottles or stoppers becoming contaminated. It so happened that Mr. Neville Grenville had allowed a neighbour to have some cider and to bottle it himself. Fortunately this was not all consumed, and the remaining bottles were sent to me.

They were ordinary wine-bottles corked, and the cider was perfectly good. Thus the bottle theory was disposed of.

The fact that this cider had been bottled at Butleigh seemed to indicate that the atmosphere in the cellar was contaminated. A careful examination of the records it was found that some was bottled on the 27th July, and another barrel was bottled the next day, the 28th July. That bottled on the 27th was very oily, while that bottled on the 28th was excellent, and showed no sign of oiliness. It is scarcely possible that any climatic or other conditions could so affect the atmosphere of the cellar as to render it one day capable of inoculating all the bottles with the microbe which produces oily cider and the next day to be free from this microbe.

There are a few of the attempts to solve this perplexing problem. After full consideration of the results so far obtained the only possible causes that seem left are—first, that the bottles themselves were contaminated, or secondly, that the water used for washing the bottles and barrels at Butleigh may have been liable to contamination, though as this water comes from springs it is hardly possible. There are, however, many other things which it is difficult to explain on this assumption, as for example, why in such case all the cider was not oily.

The final problem was to discover, if possible, a means of getting rid of the oiliness with this oily cider. It is said by some makers that if you wait for some time the cider will lose this oily character. Whether this is so or not remains to be proved, for which purpose more bottles of oily cider have been put aside. The result of these experiments convinced me that by aerating this cider it would lose its oily character. This aeration was easy to obtain on a small scale, but how to do it on a large scale was another problem. After full consideration the following experiment was made. The pomace from a cheese was carefully broken up and placed in a large open tub, the bottles of oily cider were emptied on to the pomace, the contents of the tub were stirred, and after standing for 24 hours the contents were pressed in the press and re-pressed as for the manufacture of cider. The juice which came from the press had nearly lost its oily character. It was placed in a barrel to ferment, and at the time of writing, has entirely lost the oily character and its peculiar taste it formerly had, and seems likely to turn out to be a fine draught cider.

APPENDIX.
COMPOSITION OF THE JUICE OF VARIOUS APPLES, 1899.

Name of Apple.	No.	Grower.	District.	Average Weight of Apples.	Per-centage of Juice.	Sp. Gr.	Total Solids.	Acid.	Grape Sugar.	Cane Sugar.	Tannin.	Extrac-tives Ash, &c.	
Red Jersey	221	R. Noville	Grenville	Butleigh	S. 1.5	58	1.0657	16.76	.28	12.18	1.22	.230	2.85
New Cadbury	222	Do.	Do.	Do.	S. 2.8	62	1.0601	14.00	.24	8.76	3.74	.122	1.138
Cocagee	223	Do.	Do.	Do.	S. 2.2	68	1.0600	15.00	.21	14.28	.20	.210	.100
Horner	224	Do.	Do.	Do.	S. .8	70	1.0600	14.90	.32	11.48	2.80	.158	.142
Butleigh No. 14	225	Do.	Do.	Do.	S. 1.0	43	1.0925	24.32	.48	18.88	4.22	.206	.534
Tom Putt..	226	Do.	Do.	Do.	S. 1.7	50	1.0627	17.14	.48	12.18	3.44	.122	.918
Court Pendu Platt	227	Do.	Do.	Do.	S. 1.7	50	1.0697	16.32	.39	12.04	1.84	.064	1.986
Tanner	228	Do.	Do.	Do.	S. 1.2	50	1.0817	20.36	.46	13.21	6.01	.448	.232
Do.	229	F. W. Rich	..	Sandford	S. 1.2	68	1.0777	18.94	.26	12.82	3.84	.410	1.610
Kingston Black	230	J. C. Waterman	..	Baltonsboro' S.	S. 2.2	68	1.0667	16.64	.61	11.90	2.80	.110	1.220
Do.	231	R. Neville	Grenville	Butleigh	S. 1.77	52	1.0597	14.34	.54	12.04	1.47	.126	.164
Do.	232	C. Osborne	..	N. Cadbury S.	S. 3.20	56	1.0686	17.21	.49	11.90	3.25	.116	1.454
Mill Jersey	233	Do.	..	Do.	S. 3.20	66	1.0685	16.12	.80	10.41	3.87	.280	1.310

Dove Apple	237	Do.	..	Do.	S.	4.0	62	1.0598	15.18	.35	12.04	.94	.092	1.738
Silver Cup	238	Do.	..	Do.	S.	2.0	53	1.0699	17.62	.30	12.82	3.05	.200	1.250
White Close	239	Do.	..	Do.	S.	2.6	62	1.0626	15.60	.31	11.63	2.46	.200	1.010
Unknown Vintage Apple	240	Do.	..	Do.	S.	3.2	62	1.0618	15.02	.22	12.82	.69	.142	1.148
Unknown No. 2 Cadbury	241	Do.	..	Do.	S.	4.0	57	1.0661	16.94	.89	9.26	4.33	.178	2.788
Thomas Hunt's Variety	242	Do.	..	Do.	S.	2.3	62	1.0638	16.04	.23	9.09	6.53	.086	.104
Golden Bittersweet	243	J. Badcock	..	Stogumber	..	1.20	71	1.0572	14.42	.52	10.64	1.70	.098	1.462
Red Cluster	244	Do.	..	Do.	..	3.33	50	1.0590	14.56	.28	8.92	3.26	.066	2.03
Improved Pound Apple	245	Do.	..	Do.	..	4.6	50	1.0549	13.66	.20	11.90	.60	.074	.986
Billydown Pippin	246	Do.	..	Do.	..	4.6	57	1.0609	15.86	.23	11.11	2.40	.066	2.054
Constant Bearer	247	Do.	..	Do.	..	3.0	67	1.0510	13.20	.32	11.63	.87	.076	.504
Plymton Greasy	248	Do.	..	Do.	..	4.3	47	1.0530	12.64	.41	10.00	.52	.082	1.628
Webb's Variety	249	R. Neville Grenville	..	Butleigh	S.	1.02	50	1.0572	14.08	.29	8.47	3.15	.096	2.074
Coxon Onions	250	Do.	..	Do.	S.	.88	51	1.0635	15.38	.41	10.86	1.64	.112	2.36
Butleigh No. 16	251	Do.	..	Do.	S.	1.3	51	1.07.9	19.16	.70	14.48	1.14	.240	2.600
Butleigh No. 17	252	Do.	..	Do.	S.	2.0	52	1.0731	17.56	1.30	14.08	.62	.432	1.068
Butleigh No. 18	253	Do.	..	Do.	S.	2.0	55	1.0675	16.80	.68	12.04	1.11	.142	2.928
Hoary Morning?	254	Sir W. H. Wills	..	Blagdon	..	4.0	51	1.0635	13.00	.22	11.36	.54	.044	.986

S. Somerset.

XI.—Reports upon the Society's Experiments for the Improvement of Permanent Pastures.

INTRODUCTORY OBSERVATIONS BY THE STEWARD (MR. W. ASHCROFT).

THE Society's grass experiments seemed to be dogged by ill-fortune. The summer of 1899 so much resembled that of 1898 that observations and results, very similarly poor, have to be recorded. In both seasons the grass made a start in the spring, only to be hindered by drought protracted well into the autumn. Any results in mid-summer were thus rendered perfectly futile, and the value of any observations that could be made, even in the autumn, was minimised. The summer of 1896—though not the autumn—was also dry, so that it may be said that three out of the four past seasons have been most unfavourable for manurial experiments on grass lands.

That the season of 1899 should have been a dry one is, so far as the Society's experiments are concerned, still more unfortunate, especially as the teart land experiments—which were begun in 1897 on a site at Yeovilton, and discontinued there in 1898—were resumed in 1899 on a fresh site. Under these circumstances it need hardly be said that very little progress with regard to the cause of teartness has been made, but a brief account of the experiment, so far as it has gone, is given further on.

The Society, at the time of writing this Report, is entering into an arrangement with the Board of Agriculture to conduct for it a repetition in the South of England of the grass experiments carried on in Northumberland for the past three years by Professor Somerville on behalf of the County Councils of Northumberland and Durham.

Briefly stated, this experiment is to extend over ten years, and requires a site of thirty-three acres, to be divided into eleven plots. The plots will be treated differently so far as manures are concerned, and the results will be tested annually by apportioning to each a certain number of sheep, which will be weighed when first put on, at monthly intervals, and finally when sold at the end of the grazing season. The effect upon the grass of differences of treatment will, therefore, be arrived at, not only by observation as to appearance, and by weighing the grass in small sub-plots, but chiefly by noting the quality and quantity of mutton that each plot of 3 acres shows itself capable of producing. The Society is in hopes of procuring a site, which lies in the centre of a large sheep-raising

trict, in the occupation of Mr. Stratton, of Chilcombe, Winchester, who is one of the largest farmers in England. For the sake of this new experiment, as well as the others on "teart" land, &c., it is to be hoped that the summer of 90 will show a somewhat increased rainfall as compared with the two preceding years.

PERIMENTAL SITE NO. 1, AT TALATON, OTTERY ST. MARY, DEVON.

Owned by Sir John Kennaway, Bart., and occupied by George Daw, of Larkbere Farm, Ottery St. Mary. An area of 5 acres has been treated thus:—

1 3	Renovated by re-seeding.				1 3
	Dung. 15 loads per acre.	Basic Slag. 8 cwt. per acre.	Lime. 4 tons per acre.	Dissolved Bones. 4 cwt. per acre.	
2 3	Nothing.				2 3

5 Plots—1 acre each.

ABBRIDGED REPORT OF THE BOTANICAL VISITOR (MR. F. J. ROWBOTHAM).

Date of visit, June 14th, 1899.

It was a little unfortunate that Mr. Daw, with the best intentions, should have sought to improve upon the Society's experiments by dressing the larger portion of each plot with d-scrapings and lime at the beginning of this year. The upper ends of the plots, however, were left untouched, and having made a careful examination of these, I am able to report that the improvement in the herbage is being well maintained. The lower ends of the plots are decidedly better than the upper, and one noticeable improvement in the whole of the plots, which is doubtless to be ascribed to the manuring, is that

the *patchiness* of the herbage (which formerly was so marked a feature in this field) has almost entirely disappeared.

BASIC SLAG PLOTS AT OTTERY ST. MARY, DEVON.

NOTES BY THE STEWARD.

The three new plots of basic slag suggested in the Society's 'Journal,' vol. viii., 1897-98, p. 113, on three wretched pieces of grass land, have unfortunately been deprived of their interest, owing to the drought during the summers of 1898 and 1899. A visit paid to these on June 9th, when the herbage was just making a start, is described in Mr. Rowbotham's Report; but further growth and improvement was, as in 1898, doomed to failure, as the ground was practically burnt up until the late autumn, and on October 11th the rainfall had only been sufficient to make the plots show some slight differences compared with the rest of the field.

This winter the slag has been repeated on these three plots at the rate of 4 cwt. per acre, which is at the rate of half the first dressing. As wet, cold and poor land, situated, as these three fields are, some distance from the dung-heap, is just that on which a cheap method of improvement should be demonstrated, it is to be hoped that the next two or three seasons will be more favourable for experimenting.

REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 14th, 1899.

No. 1.—Plot in North Pit Park Field.

This is an example of exceedingly poor pasture, full of Rush (both Soft Rush and Field Wood Rush) and Carnation-grass. In fact, I venture to say that the Society's experimental work has never before been extended to pasture land which stands so obviously in need of improvement as this and the adjoining fields on which the basic slag trials are being made. At the beginning of the present year the state of things in this particular field was such as to convey the impression of utter worthlessness as regards the herbage; Rush and Sedge were everywhere to be seen, and all spaces between the coarse herbage were filled with moss. With the advance of summer however, the vegetation underwent a change for the better and, as is customary with mossy pastures, much of the moss

as at the present time disappeared. The eye is at once arrested by the extensive patches of Bird's-foot Trefoil; the major portion of this, however, is not the common Bird's-foot Trefoil (*Lotus corniculatus*), but a closely allied species, *L. uliginosus*, with darker foliage and a much stronger habit. A sprinkling of White Clover is to be seen, but hardly any Red Clover. Yellow Suckling is fairly plentiful. Of the natural grasses, Yorkshire Fog is by far the most abundant, but Dog's-tail, which is also a grass commonly met with on these poorer soils, is absent. Bent-grass, on the other hand, is plentiful; there is a little Fescue and Poa, and single plants of Cocksfoot and Sweet Vernal-grass occur throughout the field.

Of other plants, Milfoil is fairly abundant, but the ground is more largely held by other composites such as Thistle, Cat's-ear, &c., and by Plantain and Scorpion-grass.

The preponderance of Bird's-foot Trefoil in these pastures may be indicative of native poorness of the soil, though, on the evidence of Rothamsted, as quoted by Dr. Masters, it may also be the consequence of exhaustion.

So far as I am able to observe, the chief change which the basic slag has so far effected in the herbage is manifested by the increased size of the patches of *Lotus corniculatus* and *L. uliginosus*, which is certainly striking. Not only are the patches of much greater extent, but the plants themselves are much more vigorous. With this increase of Bird's-foot Trefoil I am able to perceive a stimulation of the White Clover. The moss does not appear to be nearly so prevalent on the plot, and this bears out what was observed in the basic slag trials round Sherborne (*vide* 'Journal,' vol. viii. p. 137), as also on the "teart" site at Yeovilton, where the basic slag showed a decided tendency to eliminate the moss.

With regard to these trials, and also those at Wanstrow and West Grinstead, I should like to point out that the Committee is dealing largely with a class of weeds which, for reasons connected with the soil, or possibly from superiority of pasture generally, hardly came within the scope of the Rothamsted experiments. I refer to those members of the Compositæ which form so large a part of the vegetation of these sites, and also to the prevalence of Bird's-foot Trefoil. I think the need for improvement, as evidenced by the abundant presence of these deep-rooting compositous plants, cannot be denied, and it will be a point of no small interest to see whether the basic slag will reduce their numbers or exterminate them altogether, and whether the stimulation of the

Bird's-foot Trefoil will have an adverse effect upon the spread of the Clovers. In the Sherborne trials, in one case at least, there was clear evidence that certain of the *Compositæ* had been dislodged, or materially reduced in numbers, by the action of the basic slag.

No. 2.—Plot in Broad Park.

The herbage is exceedingly poor, being characterised by an abundance of Field Daisies, Thistle, Cud-weed, Hardheads, and other Composites, Carnation-grass, Field Wood-rush, Plantain, Buttercup (not abundant), Milfoil, Dock, &c. Very little Red Clover is to be seen, but there are patches of White Clover. Bird's-foot Trefoil is most abundant, and there is plenty of the larger species, *L. uliginosus*. The natural grasses are Dog's-tail, Perennial Rye, Sweet Vernal-grass, Bent-grass, Yorkshire Fog, and Silvery Aira-grass. A few plants of Cocks-foot are to be seen near the borders of the field. The inter-spaces between the vegetation are filled with moss, which is very prevalent in this field.

The plot, which is situated on a sloping part of the field, and adjoins at its lower end a boggy, rushy tract, shows a remarkable stimulation of the patches of Bird's-foot Trefoil of both species. The quantity of White Clover is also much increased. This improvement, however, is far more marked on the lower than on the higher portion of the plot. The leguminous herbage certainly seems to be spreading itself over spaces formerly occupied by the moss, and there is good reason to assume that this improvement will be continued.

No. 3.—Plot in Fullyford.

This is another example of poor pasture situated on a slope, but there is a closer bottom of grass, principally Bent-grass, than in the other two fields. The basic slag has slightly improved the leguminous herbage, but the chief improvement effected by the application in this field is that the grass has been rendered more palatable to stock.

EXPERIMENTAL SITE NO. 2, AT KILLERTON, DEVON.

Owned by Sir Thomas Acland, Bart., and occupied by Mr. Lewis Tout of Broadclyst, Devon.

area of 5 acres has been treated thus:—

Renovated by re-seeding.				
Lime. 4 tons per acre.	Basic Slag. 8 cwt. per acre.	Basic Slag 6 cwt. and Kainit 3 cwt. per acre.	Dung. 15 loads per acre.	Bone Meal. 4 cwt. per acre.

5 Plots—1 acre each.

ABRIDGED REPORT OF THE BOTANICAL VISITOR.

te of visit, June 15th, 1899.

have once more to call attention to the striking effects
uced by the action of the lime in modifying the herbage
is field. The two grasses which have most distinctly
ited by its action are Smooth Meadow-grass and Hard
e, and within the hurdled space the herbage is mainly
osed of these two grasses. Though in smaller proportions,
il and Perennial Rye-grass are likewise plentiful on this
but this year Yellow Oat-grass is not so plentiful.
sfoot is sparingly seen, and Bent-grass is decidedly less.
discouragement of Yorkshire Fog is most marked on this

White Clover and Milfoil are both plentiful.

ite Clover is abundant on the Basic Slag Plot, but within
urdled space it has succumbed to the stronger growth of
s. Yorkshire Fog is much more plentiful here than on
me, whilst Hard Fescue is markedly less. Sweet Vernal-
is fairly plentiful, as are also Foxtail, Meadow-grass and
w Oat-grass. One half of this plot has been recently
rn with kainit.

one-half of the Basic Slag and Kainit Plot, basic slag was
tly added, and on this first half the growth is very good, a
plant of White Clover being present. The second half of
lot is noticeably poorer than the first. Yellow Suckling is
plentiful, and there is an abundance of Hard Fescue and

e coarseness of the herbage of the Dung Plot is still
ed. Bent-grass is not only very abundant, but much more

forward than elsewhere in the field. Yellow Oat-grass is also abundant.

The fine appearance of the herbage on the Bone Meal Plot is due mainly to the prevalence of Bent-grass. Yorkshire Fog is also abundant. Dog's-tail likewise. The White Clover has almost entirely disappeared.

It may be worth noting that while Foxtail is comparatively scarce on the non-renovated ends of the plots, it is plentiful on the re-seeded ends; possibly some of the seeds of this plant survived the drought which followed the sowing. Cocksfoot is also rather more plentiful on the re-seeded ends, perhaps for the same reason. This valuable grass has lost its clumpy growth in this field.

NOTES BY THE STEWARD, JUNE 10TH, 1899.

The addition of kainit in the spring to Plot 2 marks no difference, but the redressing of basic slag last winter on Plot 3 can be seen very distinctly.

Mr. Rowbotham has drawn attention to the modification of the herbage in the hurdled off space on the Lime Plot, which was most striking at the time of my visit.

This field on the whole, with the grazing treatment to which it is subjected, is too good for experimental purposes.

EXPERIMENTAL SITE NO. 3, AT WANSTROW, SOMERSET.

Owned by W. Hurle Clarke, Esq., and occupied by Mr. Richard H. Yeoman.

An area of 7 acres has been treated thus:—

col 12	col 1	Basic Slag. 8 cwt. per acre.	Mineral Superphos phosphate. 4 cwt. per acre.	Renovated by re-seeding.			col 1	col 12
				Dissolved Bone &c. 4 cwt. per acre.	Dung. 12 loads per acre.	Lime. 2 tons per acre.		
						Salt. 5 cwt. per acre.		
						Nothing.		

7 Plots—1 acre each.

ABRIDGED REPORTS OF BOTANICAL VISITOR.

Date of visit, June 13th, 1899.

There is very little to report upon with regard to this site at the present time. The Basic Slag Plot still makes the best show, though that half of the plot which was re-sown with basic slag at the beginning of this year does not exhibit any advance upon the other half. The same may be said of the half of the Lime Plot which was treated afresh this spring. On the Salt Plot the comparative fineness of the herbage is still a marked feature.

There can be no question that the manured plots show a decided advantage over the unmanured portion of the field. Both the Basic Slag and the Dissolved Bones Plots have a good bottom of Clover, and, upon the former, Yellow Oat-grass seems to have been distinctly encouraged. One marked feature of the manuring (and this applies to all the plots with the exception of the Dung) is the diminution of many of the coarse compositous weeds. The other features of improvement are as stated in my Report of last year.

BASIC SLAG PLOT IN MR. BENNET'S FIELD AT WANSTROW, SOMERSET.

Date of visit, June 13th, 1899.

This plot of one acre in extent was dressed with basic slag in the autumn of last year. The topsoil is loamy, of very slight stickiness, resting upon clay. The surface of the field slopes upwards towards the south.

Though somewhat variable, the herbage of this field is, on the whole, of very poor quality—the proportion of weeds to grasses being very large. The soil is largely occupied by compositous plants, such as Cat's-ear, Knapweed (or Hardheads), Rough awkbit, &c., in places to the exclusion of all other plants. Earth-nut and Common Rib-grass are also abundant, while in lesser numbers there are Yellow Rattle, Buttercup (*Ranunculus* sp.), Daisy, &c. Of the leguminous herbage Red Clover is generally abundant, but little, if any, White Clover is present. Common Bird's-foot Trefoil and Meadow Vetchling are both abundant. The chief grasses are Dog's-tail and Quake-grass, which are everywhere abundant. Bent-grass (*Agrostis*) is likewise very plentiful, though being a late grass it is not yet in flower. In places much Hard Fescue is to be seen. Cocksfoot is only sparingly present, and Yorkshire Fog does not appear to be generally plentiful, though it occurs frequently in patches of small extent. Sweet Vernal-grass is very plentiful, but Foxtail is very scarce. Probably the relative

abundance of the former grass is to be attributed to weak competition on the part of its neighbours. The presence of Hassock-grass and Field Wood Rush seems to indicate a want of condition in the soil.

On the plot itself sufficient indication is already furnished of the beneficial tendency of the basic slag, chiefly, as was to be expected, in the stimulation of the leguminous herbage. The proportion of weeds is, however, perceptibly smaller and that of the grasses obviously greater than on the unmanured portion of the field. Moreover, whilst at this early stage it is hardly possible to remark any differences in the relative proportions of the various grasses, it is a point of interest to note that, by the elimination of many of the compositous plants, whose flat-pressed radical leaves usurp relatively so much of the surface (not to mention their powers of abstraction through their roots), the basic slag is doing excellent service, since the better grasses are thus afforded a chance of spreading.

With reference to the Clovers, the comparative abundance of Red Clover and the absence of White Clover, may perhaps be accounted for by the superior power which is attributed to Red Clover of competing with other Leguminosæ, as compared with the White Clover. The Rothamsted experiments showed that in all the plots where the conditions favoured the growth *collectively* of leguminous herbage, both the Red and the White Clover went under, but that the former held out longer than the latter. In this field the Red Clover has two powerful competitors, viz.: Meadow Vetchling and Bird's-foot Trefoil, both of which are abundant. It is quite possible that the White Clover may have already succumbed to this competition, and that the further stimulation of the Bird's-foot Trefoil and the Vetchling may diminish or even exterminate the Red Clover. On the other hand, since basic slag is favourable to the growth of White Clover, it will be interesting to observe the effects of this manure in re-adjusting the balance.

I may observe that in one of the fields at Ottery St. Mary, where the basic slag is being tried, the Bird's-foot and a closely allied species (*Lotus uliginosus*) of stronger growth and habit, are both abundant, while true Clovers are almost entirely absent.

EXPERIMENTAL SITE NO. 3, AT WANSTROW, SOMERSET.

Second visit, October 27th, 1899.

Whilst the improvement in the herbage of the manured plots compared with that of the rest of the field is maintained, the

ifference is less marked than formerly; and the same remark applies to the differences between the various plots themselves—the fact apparently being that, with the rains following an exceptionally dry season, the herbage of the plots has shown an tendency to level up, chiefly in consequence of the general response to moisture made by the Bent-grass, the tender growth of which now fills most of the bottom. The Basic Slag Plot still supports by far the best plant of White Clover, but there is a wide difference between the two ends of this plot. At the upper end, which was re-sown with basic slag in the early spring of this year, I could perceive hardly any difference in the herbage when compared with the adjoining unmanured portion of the field.

I think it is exceedingly probable that next spring, under favourable conditions of growth, the herbage of the various plots will exhibit differences nearly or quite as marked as those which it formerly displayed. Though this may only indicate that the manures are exhausted.

BASIC SLAG PLOT IN MR. BENNET'S FIELD AT WANSTBOW, SOMERSET.

Second visit, October 27th, 1899.

Referring to my previous Report on this experiment, the improvement therein noted as having been effected by the basic slag has, despite the long spell of dry weather that has intervened, been well maintained. The normal herbage of this field, it will be remembered, is very poor, being characterised by an abundance of weeds; moreover, it is variable, so that many spaces are occupied almost exclusively by the weeds, whilst such grasses as occur most plentifully are not of good quality. One of the least desirable grasses normally present in large proportion is Quake-grass; and at the present time a great quantity of Bents is to be seen. The better grasses and the Leguminosæ are much less in evidence now than they were at the time of my first visit, so that the entire vegetation wears a sparse and patchy aspect.

The contrast in passing from this portion of the field to the Basic Slag Plot is strongly marked, and this change is in the main to be ascribed to the filling out of the interspaces by Dutch Clover, which has to a very large extent replaced the spreading-leaved Compositæ. Once more I have to notice that the beneficial effects of the basic slag do not appear to have been extended to the grasses, the proportions of which seem to be much about the same as in other parts of the field, but to the stimulation of the Clovers, and, again, to the stimulation of White rather than Red Clover. It may be remarked that,

normally, White Clover is far from being plentiful in field, and its response to the stimulus offered by the sl therefore the more marked.

I regret that my suggestion that a small space on both manured and unmanured portions of the field should be enclosed, has not been carried out, as the preservation of flower-heads of the grasses, &c., by this means would have rendered a comparative observation more easy and exact. The fact that the herbage of these Basic Slag Plots is very preferred by stock is, I think, an additional reason for leaving them in order to preserve a greater equality of conditions.

NOTES BY THE STEWARD.

The additional plot at this site on an adjoining field is the old experimental one (tenanted by Mr. Bennet) but Mr. Rowbotham's report points out, further confirmed the advantage of applying basic slag to soils similar to the strong round Wanstrow. Mr. Yeoman can also show two other plots which give the same evidence, and it is satisfactory to note that since the Society commenced its experiments here, at C St. Mary and at West Grinstead, the tenants have acted on the leading result, viz., the application of basic slag.

Though the grass here did not burn up to the same extent at Ottery St. Mary, the fact that Mr. Yeoman's cows receive 5 lbs. of cake a day from July shows how much extra help is needed.

There was little to note either in the spring or in the autumn on the old site, except that the putting on of basic slag and lime again produced no further effect.

That the re-liming did no good is not surprising, but the application again of basic slag should have been very successful results is somewhat striking.

EXPERIMENTAL SITE NO. 4, AT SHERBORNE, DORSET

Owned by J. K. D. Wingfield-Digby, Esq., M.P., occupied by Mr. Caleb Young, Blackmarsh Farm, Sherborne. An area of 4 acres has been treated thus:—

<i>Road Scrapings.</i>	<i>Nothing.</i>	<i>Basic Slag. 8 cwt. per acre.</i>	<i>Re-seeded in Spring, 1</i>
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4 Plots—1 acre each.

ABBRIDGED REPORT OF THE BOTANICAL VISITOR.

Date of visit, June 15th, 1899.

The grass had been cut before I arrived (though I had advised Mr. Rawlence of my coming), but it had not been mowed, and so far as I could judge by examining the rows, the proportion of grasses and Leguminosæ to weeds denoted a decided improvement upon the former condition of the herbage. Perennial Rye is at present by far the most abundant grass in the field; and in lesser numbers there are Dog's-tail, Hard Fescue, Cocksfoot, Yellow Oat-grass, Rough Meadow-grass, Brome, and Yorkshire Fog. With these grasses is associated an abundance of Trefoil, a few weeds, such as Hawk's-beard, together with Chickweed, &c.

The best growth is to be seen on the Road Scrapings Plot; here the Trefoil and White Clover are thickest. But Mr. Young, the present occupier, tells me that the yield from this particular plot was far heavier last year, when the Trefoil grew so compactly that hardly any grass was to be seen amongst it. This Trefoil, which under favouring conditions of growth seems able to hold its ground against the rest of the herbage, though called by the farmers "Hop" Trefoil, is not the true Hop Trefoil (*Trifolium procumbens*), but Black Medick (*Medicago lupulina*). Mr. Young expressed himself as well pleased, and not a little astonished at the results produced by the manure on this plot; but I think that a general improvement of the herbage is perceptible this year. It is worth noting that in the upper end of the field, where the soil is heavier, Red Clover is abundant, though it is scarce in the lower portion.

Two spaces in the field have been hurdled off since the commencement of the experiments (in 1895), and a brief reference to the state of the herbage in these spaces may not be uninteresting, as exhibiting the results of close competition for a period of four years, unchecked by either mowing or grazing. In the first space all the weeds and Leguminosæ have been entirely eliminated, and the number of grasses is reduced to five, viz.: Cocksfoot, Rough Meadow-grass, Hard Fescue, Yellow Oat-grass, and Brome-grass—all of which are of very vigorous growth. In the second space there is a similarly strong growth of Yellow Oat-grass, Rough Meadow-grass, Hard Fescue, Yorkshire Fog, Brome-grass and Cocksfoot, with one or two plants of Perennial Rye-grass. Of other plants there are a few composites, and a small quantity of Bird's-foot Trefoil. In both cases the Brome-grass is confined to the edges of the enclosures, as if it had been driven outward by its

antagonists.* The growth within these spaces seems to afford some insight into the results of the struggle for existence amongst the grasses of the field and between these and the leguminous plants in determining the predominance of certain species and the elimination of others—the chief points of interest being the banishment of Perennial Rye-grass (normally the most abundant grass in the field), the supplanting of the Smooth by the Rough Meadow-grass † (a fact which, if true, is of more interest than might appear at first sight), and the almost complete subjugation of the Clovers.

BASIC SLAG TRIALS AT STOCKBRIDGE, NEAR SHERBORNE, DORSET.

On the estate of J. K. D. Wingfield-Digby, Esq., M.P.

Geological formation, Oxford Clay.

Date of visit, October 28th, 1899.

A poorer piece of land, or one more typically representative of the poor clay pastures of this district, than that selected by Mr. Rawlence for experimenting with basic slag, could hardly be found. For all practical purposes undrained, ‡ and little better than a bog after even moderate rainfall, this field normally supports a herbage of the poorest and most meagre character. I will here give briefly the results of my observations made at my previous visit (October, 1898):—

The principal grasses were Bent (or Fiorin) and Yorkshire Fog, and with these were abundantly associated Carnation-grass, Field Wood-rush, Common Rush, Marsh Cud-weed, and Creeping Buttercup. Moss was exceedingly prevalent, filling all interspaces. Clovers were only sparsely represented. The abundance of Rush, Carnation-grass, &c., betokened the

* May not this result from cattle being able to reach the edges only?—C. T. D. A.

† Smooth Meadow-grass was at the period of my first inspection very plentiful in this field. These two Meadow-grasses, though closely allied, differ to some extent in structure and habit, and possibly in relative hardness also. Rough Meadow-grass has dense, fibrous roots, and is distinctly a surface-feeder; Smooth Meadow-grass produces fibrous roots which descend deeper than do those of its relative, and possibly on this account Smooth Meadow-grass is better fitted for withstanding drought and frost than the Rough variety. At Rothamsted Smooth Meadow-grass benefited by the nitrogenous manures, whilst Rough Meadow-grass markedly declined on the ammonia plots, but flourished on the nitrate plots, especially where the excess of nitrate was used with mixed mineral manures. It would appear, say Messrs. Lawes and Gilbert, that the relatively shallow-rooting Rough Meadow-grass benefits by its surface roots arresting the nitrate before it has had time to penetrate too deeply. The relative abundance of Rough Meadow-grass on this site seems to suggest either that its capabilities for resisting drought are better than has been supposed, or that it has derived marked benefit from the nitrogenous manure in the form of mud-scrappings.—F. J. R.

‡ The existing drains are useless, having been laid too deep.—F. J. R.

wampy condition of the soil. The only seeds ever sown were according to the occupier, who, I may mention, takes a lively interest in the experiment) a small quantity of Red Clover; and this sowing was done many years ago.

The plot had been dressed with basic slag in the spring of 1895 (*vide* Society's 'Journal,' vol. viii. p. 134), and the changes noted on this occasion were the production of a good plant of Clover and the complete elimination of Carnation-grass, Rush, and Moss, together with a marked reduction in the quantity of Buttercup. The difference in the bottom-growth was sufficient to be readily detected by the eye, and the effect was even more marked as one stepped from the untreated portion on to the plot. Both Bent-grass and Yorkshire Fog had markedly benefited by the basic slag, but no other grass supposing such to have been existent in the field) appeared to have responded to the stimulus of the manure.

Continuing the history of the experiment, the entire field (including the plot) was dressed with basic slag last winter, and in August last the plot received a top-dressing of dung. The field was mown this year.

The beneficial effects of the treatment are sufficiently striking in the field. Carnation-grass has disappeared, and the proportion of Field Wood-rush and Common Rush has been greatly diminished—partly, no doubt, as a consequence of the unusual dryness of the late season—and the entire field has now a full bottom of young White Clover, with which is associated a small quantity of Red Clover and a still smaller quantity of Bird's-foot Trefoil. It should be noted, however, that this improvement only became apparent after the late rains which followed the drought.

Concurrently, however, with this improvement in the general herbage of the field, there is no appreciable alteration in the proportions of the grasses.

[This was what I observed in the field, but it is curious that in a sample turf from this field which Mr. Rawlence has very kindly sent me at my request, I am unable to find a single plant of either Yorkshire Fog or Bent-grass—the only grass present in the 12' × 12' turf being Perennial Rye; the growth of this grass is very small, and it may have been overlooked in the field. It looks, however, as if this grass had been encouraged by the basic slag. The square of turf is for the most part composed of a fine growth of young White Clover.]

Unquestionably the herbage of the field is undergoing a material change, which by the time spring arrives will probably

have assumed a more distinctive character. The whole, however, is overrun by Bents, and the young Clover seems mainly to occupy spaces formerly filled by Moss.

Despite the fact that the herbage of the field has materially improved, the condition of the plot at the present time offers a marked contrast to what it formerly was. To a certain extent this is due to the presence of the dung and consequent avoidance of the herbage by stock. But the contrasting change is seen in stepping from the field on to the plot, when the grassy nature of the herbage becomes fully apparent. With the exception of Buttercup, the weeds are practically non-existent—both Carnation-grass and Rush have been completely eradicated. The herbage consists of the following grasses: Perennial Rye, Bent, and Yorkshire Fog; the interspaces being filled with young White Clover. The two first-named grasses are very abundant; the Rye-grass has made thick masses of roots, and seems to be luxuriating in a water-meadow; Yorkshire Fog has also produced a heavy leafage, but the proportion of this grass is far less than that of either Rye or Bent. No Moss is to be seen on the plot.

It seems impossible to exaggerate the degree of contrast which this plot now presents to the rest of the meadow, perhaps to overrate the importance of the changes produced in relation to the conduct of these and similar experiments. When we turn to the Rothamsted Reports we find that these three grasses—Perennial Rye, Bent, and Yorkshire Fog—derived the most substantial benefit from liberal dressings of nitrogenous manures; but that Perennial Rye especially luxuriated on the plot dressed with nitrate of soda and mixed mineral manures, its predominance on this plot comparing most favourably with its production on a plot treated with nitrate of soda alone. The Rothamsted record, in fact, shows that all three grasses were most dominant where the nitrogenous manure was mixed with the largest proportion of phosphate of lime (the latter being one of the constituents of the "mixed mineral manure"). Inasmuch as the striking changes in the Stockbridge field followed the application of the dung to the previous sowing of basic slag, it would appear that it is not to either the basic slag or the dung alone, but to the *combination* of these two manures that the remarkable stimulation of these three grasses is to be ascribed.

[Since the foregoing notes were written I have received from Mr. Rawlence two turfs cut from the plot. I have carefully examined these in the hope of finding some other grass

the three mentioned above. But in neither of the or yet in a parcel of cut herbage from the plot which I sent, have I been able to discover a single plant of grass. This careful examination, however, has shown that the fibrous roots of the grasses are densely packed, and to the depth of three inches, whilst the quantity of shoots is enormous. Evidently the stimulation of the making itself felt in root-production. The proportion of grass in these samples is very large, as compared with either Bent or Yorkshire Fog. Everywhere amongst the sedges is visible the seedling growth of Dutch Clover, the abundance of which is not easily perceived on account of the over-topping grasses.]

I subsequently inspected a second field on this farm, over a larger portion of which basic slag had been sown last

The normal herbage of this pasture is exceedingly old and chequered with patches of coarse weeds. So far, the treatment effected has been the reduction of weeds, but the sward is to be seen here and there, and no doubt the pasture is undergoing a radical change for the better.

EXPERIMENTAL SITE No. 5, AT WEST GRINSTEAD, SUSSEX.

Owned by Rev. J. Goring, and occupied by Mr. John Reeve, of West Grinstead, Horsham, Sussex. The area of 4 acres has been treated thus :—

	Salt.—4 cwt. per acre.				
Lime. 2 tons per acre.	Basic Slag. 8 cwt. per acre.	Basic Slag. 4 cwt. per acre.	Superphosphate. 4 cwt. per acre.	Superphosphate.—3 cwt. per acre. Kainit.—2 cwt. per acre.	Nothing.
	Peat Moss	Manure.	—10 loads per acre.		

ABRIDGED REPORTS OF THE BOTANICAL VISITOR.

Date of visit, June 21st, 1899.

The recent spell of dry weather has had a very adverse effect upon the herbage of this field, so that there is little to be seen. The 8 cwt. half-plot of basic slag still carries a good bottom of White Clover, but this year the plot bears as well a strong growth of Yorkshire Fog. On the dung strip the growth still shows up well. On the lime the quantity of Fescue is larger than elsewhere, but the entire herbage is very thin. On one half of the salt strip Mr. Reeve sowed nitrate of soda at the beginning of this year, and this seems to have had a good effect. But, as Mr. Carruthers remarked with respect to this field, "the real *desideratum* is a better supply of water food," and there is no doubt that under present conditions the herbage is seen at its worst.

It may be worth noting that Foxtail, which is not at all plentiful in this field, is exceedingly abundant at the present time on a narrow strip crossing the plots, and which I am informed marks the direction of a hedge which formerly traversed the field. In 1895, before the manures were applied, I observed this same strip occupied by an exceedingly close growth of Yorkshire Fog. It would therefore seem as if the manures had so benefited the Foxtail as to enable it to supplant the Yorkshire Fog.

BASIC SLAG PLOTS AT WEST GRINSTEAD, SUSSEX.

Date of visit, June 21st, 1899.

No. 1.—"The Patches" Field.

Half an acre, sown with 4 cwt. of basic slag.

Clay, resting on the Weald Clay.

The herbage of this field is far from being uniform as regards either quality or quantity. In some parts the soil is chiefly occupied by compositous and other weeds; in others there is much more grass and clover to be seen.

The following grasses are abundant: Yellow Oat-grass, Foxtail, Dog's-tail, Yorkshire Fog, Bent, and Hard Fescue—the two last-named comprising most of the bottom. Tall Fescue and Sweet Vernal-grass are plentiful in places, but Dock-foot is not plentiful except at the borders. Quake-grass is plentiful; Hassock-grass is seen here and there, but chiefly at the lower end of the field.

will be noticed that the soil carries some grasses of good quality; the poorness of the herbage, however, consists in the very large proportion which the weeds bear to the grasses.

The leguminous herbage comprises an abundance of Red Clover, with frequent patches of Bird's-foot Trefoil, and occasional smaller patches of Dyer's Greenweed (*Genista tinctoria*), and here and there Common Vetch (*Vicia sativa*).

The most abundant weeds belong to the Compositæ and arise Hardheads, Ox-eye Daisy, Field Daisy, Milfoil, Knot's-beard, Rough Hawkbit, with, in lesser quantities, Cleavers and Cat's-ear. In varying proportions there are also Star Stitchwort, Dock, Buttercup, Yellow Rattle, St. John's Wort, Self-heal, &c. Rib-grass is abundant, and Field Wood-rue is frequent. I have in other Reports called attention to the habit of the Hardheads, Cat's-ear, &c., in occupying very large spaces of soil by means of their broad, flat leaves.

In the plot itself the stimulation of the Bird's-foot Trefoil and the Red Clover, resulting from the basic slag, is quite remarkable. White Clover here makes itself evident for the first time, spaces being completely filled with it. With the Bird's-foot and White Clover are associated Black Medick, Hop Clover, and Yellow Suckling, their presence indicating the fertility of the conditions, since they are not evident on other parts of the field. Composites are still met with on the same spots.

But the proportion of weeds, as well as grasses, is necessarily much reduced, owing to the superior growth of the leguminosæ.

The fact that stock appreciate the Bird's-foot Trefoil affords a strong point in favour of its encouragement on many of these poor soils, or—what is almost equivalent in regard to productive power—soils which are specially liable to become parched and fissured in summer. The Bird's-foot Trefoil, being much deeper rooted than any of the Clovers, is practically independent of surface moisture or surface food, and is enabled to flourish on some of the poorest and driest soils.

At the same time it should be borne in mind that the stimulation of this Trefoil in pastures where it is normally abundant, will probably be at the expense of its less robust associates, the Red and White Clovers, should these happen to be present.

No. 2.—“ Danefold Six-Acres ” Field.

Half an acre, sown with 4 cwt. of basic slag.

This is an exceedingly poor pasture; the chief, and indeed almost the only grass present, is Sheep's Fescue. Patches of Bent occur here and there. A few plants of Cocksfoot are to be seen. The Bird's-foot Trefoil is frequent in patches, but the growth is stunted (it is really, like the rest of the herbage, kept closely cropped by stock). Carnation-grass is abundant, with Rush, Hardheads, &c., while the interspaces are everywhere filled with Moss.

I am informed that a few weeks back the herbage of the plot showed considerable improvement, but since the admission of stock it has been so closely grazed that little difference is to be seen between the plot and the rest of the field. The plant of Bird's-foot, however, seems to be increased, and the quantity of Hardheads is less here than it is outside. The Trefoil will afford material for the basic slag to work upon, and any beneficial effect worked by the manure will no doubt be chiefly in this direction. The discouragement of the composites and the Carnation-grass, if effected, will also give the grasses a better chance of spreading themselves.

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NOTES BY THE STEWARD.

In a previous volume of this 'Journal' Mr. Carruthers drew attention to the need on these poor Weald clays of a plentiful rainfall. The practical results at this site during the past summer forcibly illustrate Mr. Carruther's views, and also the dryness of the season in the locality, for off the 11-acre field, where the plots are situated, the tenant put all his hay on one waggon.

The two new sites on which basic slag was applied last winter, one being on a poor grass field adjacent to the old one, and the other on a field almost destitute of herbage except Carnation-grass and weeds, showed most marked improvement at the time of my visit in the beginning of June; but when I went again in the middle of October the tenant informed me the fields had been burnt up all the summer, and the deficiency of rainfall in that locality had been more marked even than elsewhere, sufficient rain to make any difference to the grass not having fallen till the beginning of October. It need hardly be remarked that the improvement noticed in the spring could no longer be observed.

EXPERIMENTAL SITE NO. 6, AT BUTLEIGH, SOMERSET.

TEART LAND EXPERIMENT.

Owned by R. Neville Grenville, Esq., and occupied by Mr. Bethell, of Butleigh.

NOTES BY THE STEWARD.

A fresh site for the experiments, which have for their object the ascertaining of the cause of and the remedy for "teariness," was, by the co-operation of Mr. Neville Grenville, secured upon his estate at Butleigh. This land, which, in an ordinary season, has a well-earned reputation for producing scouring in cattle, is situated close to Butleigh Court. The soil of the field is the same strong retentive clay which characterises teart lands.

An area of six acres was divided by link wire fencing into three portions. At the beginning of June two Shorthorn heifers were placed on each portion, one pair receiving 3 lbs. of undecorticated cotton-cake per head daily, the second pair feeding on grass without cake, and the third pair feeding on grass without cake, but having water which was impregnated with lime given to them to drink instead of the ordinary water.

The lime water was prepared by standing a barrel on end, filling it with water and adding lime which was well stirred in. After sufficient time had been allowed for the undissolved lime to settle, the water was drawn off, by means of a tap placed a short distance above the bottom of the barrel, into a tub from which the cattle could drink.

The heifers were grazed till the middle of October, and were then sold by auction for rather less than they cost, but this must not be taken as indicating that they did not improve. As a matter of fact, the prices for cattle at the end of the grazing season were not, as is usually the case, so good as at the beginning, and in addition to this they had to face a bad market. Competent judges who saw the heifers at the beginning and at the end of the experiment considered that, judged by the market-rate at which they were bought, they were from 2*l.* to 2*l.* 10*s.* a head better. Bearing in mind that during much of the time the field was very bare of grass, it may be said that the cattle did not do amiss, although the pecuniary result was disappointing.

The pair which received lime water did quite as well as those which had cake, which suggests the desirability of that part of the experiment being repeated this year.

Dr. Newman visited the site in June, and arranged for samples of grass and of the fæces to be sent up for bacteriological investigation as soon as the cattle showed any signs of scouring. Chemical analyses were also to have been made by Dr. Voelcker, who visited the site at the time of its selection. Owing, however, to the failure in the growth of grass from the lack of rain, the cattle never scoured at all, and the experiment closed with but one result, viz., that in a season like the last, teart lands, whatever their reputation may be, can safely be fed, and this I believe can be corroborated by other occupiers of similar land.

It should be mentioned that after a few weeks the natural water supply, which was derived from a ditch running round two sides of the field and from a pond in one corner, failed, and water had to be carted during the remainder of the season, thereby adding somewhat to the expense of the experiment.

REPORT OF THE CONSULTING CHEMIST (DR. J. A. VOELCKER).

The following is a Report from Dr. Voelcker, dated August 5th, 1899 :—

I made analyses of the first set of grasses which were sent by Mr. Neville Grenville from the lands Mr. Ashcroft and I selected (one from "scouring" land, and the other from *sound* land), and I append a report of the results of these analyses.

The point sought to elucidate was—is the grass from the "scouring" land of such nature as to lead to the conclusion that it is *immature* as compared with other grass, and that consequently it may cause cattle to scour?

This turns, so far as we know, on the question of relative richness in nitrogen, and on whether this nitrogen exists in the case of "scouring" grass in forms that indicate immaturity—such as amides, nitrates, &c., rather than the more mature forms, albuminoids.

With such conditions as prevailed this year one might quite well not have such differences brought out, and I cannot say that my examination of the scouring grass shows it to be immature as compared with that of sound pasture land near by. I have arranged that when the grass grows again so that the stock can be put on it, I shall have further samples sent to me, more especially when "scouring" first starts.

ANALYSES OF HERBAGE FROM "TEART" LAND AND SOUND
LAND AT BUTLEIGH, SOMERSET.

Grass dried at 100° C.	No. 1. Woodsmead. ("Teart" land.)	No. 2. New Grounds. (Sound land.)
Total Nitrogen	2·194	2·718
Albuminoid Nitrogen	1·611	2·006
Non-Albuminoid Nitrogen ..	·583	·712
Soluble Albuminoid Nitrogen ..	·072	·511
Insoluble Albuminoid Nitrogen	1·539	1·495
Nitrogen as Nitrates	·015	·015
Equal to Ammonia	·018	·018
Water in natural grass	74·73	73·67

will be noticed that the sound grass has even more total nitrogen than the "teart," and that there is more non-minoid nitrogen in the former. There is, therefore, nothing to support the supposition of immaturity in No. 1. It is, however, composed of harder and coarser herbage than No. 2.

ANALYSES OF WATER FROM "TEART" LAND, BUTLEIGH, SOMERSET.

	From Brook.	From Pond.
	Grains per Gallon.	Grains per Gallon.
Total solid residue	25·48	22·40
Lime	9·53	8·68
Magnesia	·83	·74
Oxide of Iron and Alumina ..	·48	·17
Chlorine	2·32	1·86
Equal to Chloride of Sodium	3·81	3·07
Sulphuric Acid	2·10	..

NOTE BY THE STEWARD.

As the rainfall plays an important part in the conditions which induce teartness, a copy of the daily rainfall experienced at Butleigh during 1899 is submitted, from which it will be seen that after April, which had been preceded by a dry March, and no rain at all in the latter half of January, there was a very small rainfall until September. If we take into consideration the dry state of the ground before the April rains, and the wide intervals between rains, accompanied by hot sunny weather, which characterised the

summer, it will be seen at once that the season of 1899 was pre-eminently anti-"teart," and that even the fair amount of rain that fell in September did not, owing to the previous very dry condition of the soil, induce the growth that might have been expected.

RECORD OF THE RAINFALL AT BUTLEIGH.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
1	.38	..	..	..	.08	..	.02	..	.14	.44	..	..
2	.09	..	..	..	..	..	.28	..	.04	..	.35	..
3	..	..	..	..	..	..	..	.14	..	.02	.99	..
4	..	.30	..	..	..	..	..	..	..	..	.22	.03
5	..	.19	..	..	..	..	..	..	1.10	.11	.17	.02
6	.05	.18	..	.20	..	..	..	..	.18	..	..	..
7	.09	.20	..	.03	..	..	..	..	..	..	.45	..
8	..	.10	.11	..	..	..	..	..	..	..	.12	..
9	.63	.20	..	.19	.08	..	..	..	..	..	.95	..
10	.33	.05	..	.02	..	..	.08	..	..	..	.06	..
11	.23	.21	..	..	..	..	..	..	..	.11	.03	..
12	.25	.19	..	.12	..	..	..	..	..	..	..	.68
13	.11	.09	..	.78	.03	..	..	..	..	..	..	..
14	.07	.19	..	.10	..	..	..	.69	..	..	..	..
15	.25	.90	..	.02	.14	..	..	..	.16	..	..	..
16	.31	..	..	.03	..	..	..	..	.07	..	..	..
17	.26	..	..	..	.27	..	..	..	.08	..	..	..
18	.04	..	..	..	.26	.27	..	..	.16	..	..	..
19	..	..	..	..	.02	.24	..	..	.14	..	..	..
20	.42	..	..	.33	.02	..	..	..	.12	..	..	..
21	.16	..	..	.25	.02	..	..	..	.07	..	..	..
22	.06	..	.02	..	..	..	.24	..	..	..	..	.19
23	..	..	.03	.14	.52	..	..	..	.07	..	..	..
24	..	..	..	.20	.32	..	..	..	..	..	..	..
25	..	..	.06	.14	..	..	..	..	.13	..	..	.18
26	..	..	..	..	..	..	..	..	.04	.31	.04	..
27	..	..	.17	..	..	..	..	..	.03	.37	..	.05
28	.08	..	.05	..	..	..	..	.25	.27	..	..	.55
29	..	..	..	..	..	..	..	.10	..	.38	..	.19
30	..	..	.05	..	..	.48	..	.06	.20	..	.13	.03
31	..	..	..	..	..	..	..	.48	..	.02	..	.05
Totals	3.81	2.80	.49	2.55	1.76	.99	.62	1.72	3.00	2.26	3.51	1.97
Total from Jan. 1	3.81	6.61	7.10	9.65	11.41	12.40	13.02	14.74	17.74	20.00	23.51	25.48

Total 25.48

It will also be instructive to compare the monthly **rainfalls** at Butleigh for 1896, 1897 and 1898. In 1896 and 1898, both dry years, the total rainfall was less than in 1899 (all three being much below the average, which is about 29 inches), but the

tion of the rain in both these years did not favour the of the land dry for so long as in 1899; the dry weather was broken up earlier by the rain in August, and in ere was far more rain in May and June.

	1896.	1897.	1898.	1899.
.. .. .	·74	1·55	1·29	3·81
.. .. .	·45	3·81	1·76	2·80
.. .. .	3·48	3·44	·67	·49
.. .. .	·92	2·43	1·41	2·55
.. .. .	·13	1·79	3·19	1·76
.. .. .	1·82	2·72	1·93	·99
.. .. .	·90	1·39	·40	·62
.. .. .	2·30	4·57	1·48	1·72
r	6·05	3·41	1·18	3·00
.. .. .	1·82	1·42	4·12	2·26
r	·95	1·31	3·07	3·51
.. .. .	4·69	4·59	2·92	1·97
	24·25	32·43	23·42	25·48

nnexion with the subject of rainfall, it may be remarked e Committee have decided to keep similar observations re at their other sites.

The Society's Dairy and Farriery Schools. By THOS. F. PLOWMAN, Secretary and Editor.

CHEESE SCHOOL—TEACHING SECTION.

ESE School has been carried on by the Society during t year, on behalf, and at the cost, of the Somerset County l, at Hedge Farn, Pyllle, near Shepton Mallet, the owner farm being Lord Portman, and the occupier Mr. F. H. g.

usual arrangements were made with the tenant for e and control of his dairy, the supply of milk from ws, and the boarding and lodging of Students in his

School was supervised by Mr. G. Gibbons, the Society's Schools' Steward, the teacher being Miss Cannon.

following table shows the number of Students at the X.—F. S. K

130 *Plowman on the Society's Dairy and Farriery Schools*

Society's Cheese Schools from their initiation until the present time :—

County.	Centre.	No. of days School was open.	Year.	No. of Students.					
				3 weeks.	4 weeks.	3 weeks.	2 weeks.	10 days.	1 week.
Somerset..	Wells	184	1890	..	5	1	6	..	51
" ..	Frome	229	1891	..	12	1	12	..	32
" ..	Axbridge ..	214	1892	..	14	..	5	2	16
" ..	Butleigh ..	214	1893	..	24	..	3	..	15
" ..	Murk	214	1894	..	16	..	4	..	22
" ..	Haselbury ..	214	1895	..	30	..	..	..	8
" ..	Cossington ..	214	1896	1	10	..	3	..	8
Dorset ..	{Milton (near) Gillingham}	209	1896	..	22	1	3	..	6
Somerset..	Long Ashton	214	1897	..	16	..	5	..	4
" ..	"	214	1898	..	19	1	1	..	14
" ..	Pylle "	214	1899	..	10	..	6	..	17
		2,334	..	1	178	4	48	2	193

The table on page 131 shows the quantity of cheese made in 1899, and the prices realised; Messrs. Hill Brothers Evercreech, being the buyers.

Owing to the drought of last year the quantity of cheese made per cow was very small, but the average price, 69s. cwt., is the highest that has been obtained since the establishment of the School in 1890, the nearest approach to it being in 1892, when the average price was 67s. 3d. per cwt. of 112

Since the establishment of the Butter and Cheese School in 1888 and up to the end of 1899, the Society has, in conjunction with County Councils and other public bodies whom it has acted, expended the sum of 24,973l. in promotion of technical instruction in dairying through the medium of these Schools. Even this sum by no means represents the total expenditure, for it does not include the cost of hiring and fitting up buildings for the travelling Butter School and other liabilities undertaken by local bodies—such as County and District Committees—co-operating with the Society.

The School will be reopened for the season of 1900 on April 1st at Vale Farm, in the occupation of Mr. Jesse Sage, Batcombe Evercreech. The premises, which have recently been altered and improved for the purposes of the School, are suitable and commodious, and there is ample provision at the residence attached to the farm for the comfortable boarding and lodging of Students.

Date.	Place.	Number of Draft.	Weight of Green Cheese.	Weight of Cheese when sold.	Total Weight of Cheese sold.	Shrinkage per cwt.	Average age of Cheese when sold.	Price per 112 lbs.	Milk used.	Average price per 112 lbs. of the year's output.
1899	Pylle ..	First (April 1 to 30) ..	cwt. qrs. lbs. 27 2 20	cwt. qrs. lbs. 26 0 1	cwt. qrs. lbs.	lbs. oz.	12 weeks	s. d.	galls.	s. d.
"	" ..	Second (May 1 to 31) ..	40 0 22	38 0 1		6 8	11 "	63 0		
"	" ..	Third (June 1 to 30) ..	39 2 10	36 3 25	183 1 8	7 6	11 "	70 0		
"	" ..	Fourth (July 1 to 31) ..	33 3 5	31 2 23		7 2	11 "	74 0	21,220	69 0
"	" ..	Fifth (August 1 to 31) ..	22 2 19	21 0 1		8 3	12 "	74 0		
"	" ..	Sixth (Sept. 1 to Oct. 31)	31 3 27	29 2 13		8 5	12 "	74 0		

The distance of the farm from the railway stations named below is as follows:—Bruton, 2 miles; Cole, 3 miles; New Evercreech, 2½ miles; Evercreech Junction, 4½ miles. Mr. Sage will arrange for a vehicle to meet the train at either of these stations if Students will communicate with him beforehand. The charge per journey, either way, will be 2s. for one Student, and 1s. 6d. each for more than one on the same journey.

The Teaching Staff will consist of Mrs. Sage, who, as Miss Cannon, has been associated with the School since its establishment in 1890, and her sister, Miss Emily Cannon. The reputation and experience of these teachers will be a guarantee that the instruction will be thoroughly practical and of the best possible kind. Over 2,000l. have been awarded in prizes for cheese made by Mrs. Sage and her mother.

The fees (payable in advance) are as follows:—

	Residents in Somerset.			Non-Residents.		
	£	s.	d.	£	s.	d.
For the first week (with board and lodging)	1	10	0	2	0	0
" second week	1	7	6	1	15	0
" third week	1	2	6	1	10	0
" fourth week	1	0	0	1	1	0
Fee for complete Course of four weeks	5	0	0	6	6	0

Day Students (at a charge of 10s. 6d., including board) will be admitted only when the class for longer periods is not full.

Students who have previously attended the School for not less than a month are admitted at a reduced fee of 5s. for one day's instruction; 4s. per day for any other period less than a week; 25s. per week for any other period less than a month, and 4l. for one month. For day Students these fees include board, and for all other Students board and lodging.

The School will be closed for the season on October 31st, 1900.

The County Education Committee have arranged to offer twenty Studentships, tenable at the School, of the value of 2l. 10s. each, being half the fee for a full course of four weeks' instruction, with board and lodging. Applications respecting Studentships should be made to Mr. C. H. Bothamley, Director of Technical Instruction, Weston-super-Mare.

The Society's Annual Exhibition, which opens on May 30 at Bath, a Gold Medal and several valuable money Prizes (particulars of which will be found on page xcvi. of the Appendix to this volume) will be given jointly by the Society and the Somerset County Council for Cheese made by Students who have attended any of the Society's Somerset Schools.

There will also be a large number of prizes similarly given for Butter-making in classes for Somerset Students. At the request of the County Council, arrangements have been made for demonstrations in the methods of testing the milk yield of cows, both in respect of quantity and quality, in the Working Dairy at the Bath Meeting.

CHEESE SCHOOL—RESEARCH SECTION.

At the request of the Board of Agriculture, the Society's Agricultural Education Committee, with the sanction of the Council, arranged with Mr. F. J. Lloyd, the Society's expert, to make a special Report upon the whole of the Society's research work in Cheese-making. The Report has since been published by the Board in the form of a pamphlet with illustrations. It reviews the progress of the investigations from their commencement in 1891 to the end of 1897, and indicates the lessons of practical value to Cheese-makers, which have been elicited in the course of the inquiry.

During the past year the Society's research work, which had for some years been conducted at the joint expense of the Society and the Board of Agriculture, has been in abeyance, owing to the Board not being prepared at present to make a further grant in aid. The Committee regret that these investigations, the utility of which has been so generally acknowledged, have not been proceeded with, as they could hardly be carried on under more advantageous conditions than those which exist in connection with the Society. The latter contributes, directly and indirectly, the larger proportion of the cost, whilst an excellent field for observation and research is provided by the Cheese School itself.

FARRIERY SCHOOL.

The Travelling Farriery School, carried on by the Society for the Somerset County Council, has been well attended by pupils during the past year.

The School has not only been a success in point of attendance, but the pupils have shown a genuine and intelligent interest in their work, and have not hesitated to express themselves as thoroughly satisfied with the instruction given.

The School is supervised by the Society's Farriery Steward (Colonel Best), and the Veterinary Surgeon attached to it is Mr. G. H. Elder, M.R.C.V.S., of Taunton. The latter lectures to the classes upon the anatomy of the horse's foot, and upon other subjects connected with farriery, and acts as general adviser upon the work of the School.

The instructor is Mr. W. B. Blackall, master smith, late Coleshill, Highworth, Wilts, who, previous to his appointment to the post, had won twenty-one prizes and several high commendations at shoeing competitions held by the Bath and West of England Society and other Agricultural Societies.

Forges, iron, and all the necessary tools and appliances are provided by the Society, and are contained in a van, which is moved about from place to place, so that the School may be brought within easy reach of the smiths of any particular locality in the county.

The instruction is restricted to those who are already in the trade. This is essential, not only to avoid jealousy and ill-will, but because the instruction can only be given effectively, in the necessarily limited number of lessons, to those who have already acquired a fair knowledge of ordinary shoeing. The aim is to improve old hands rather than to teach beginners.

A course of instruction, the fee for which is 2s. 6d., consists of ten lessons. Pupils who have previously attended the School can have a further course of instruction at the reduced fee of 1s. The instruction is given at six o'clock in the evening, as the pupils, having their ordinary work in the day, cannot conveniently attend before that hour. A class consists of four pupils, and, as the same pupils cannot always attend night after night, it is generally arranged to have two different classes, which are taken on alternate nights. The pupils are shown the correct method of shoeing every kind of horse they are likely to have to deal with, and how to adapt shoes to abnormal conditions of feet. A typical collection of shoes and hoofs is always on exhibition at the School, and the explanations given of them are much appreciated.

That the pupils have profited by the instruction given has been shown by independent local testimony and also by the results of many public competitions in which they have taken part. In the open competitions for smiths, held at the Show of the Somerset Agricultural Association, at Bridgwater, in May last, the whole of the prizes, including the Champion Gold Medal, were won by pupils of the School. The pupils also carried off several prizes in the competitions at the Show of the Bath and West Society at Exeter this year.

The lectures given by the Veterinary Surgeon attached to the School have been thoroughly appreciated. One of the lectures was attended by thirty smiths, three of whom came fourteen miles, six eight miles, and others six miles, in order to be present. A vote of thanks to the lecturer was proposed and seconded by working smiths, who, in doing so, said that the School was, to use their own words, "the most practical and useful thing going."

WOMAN on the Society's Dairy and Farriery Schools. 1

accompanying table shows the places visited and t
of pupils at each since the starting of the School.

Centre.	Year.	School		No. of Pupils.	Total N of Pup each year.
		Opened.	Closed.		
.. .. .	1895	April 8	Aug. 5	32	71
m.. .. .	"	Aug. 7	" 31	7	
.. .. .	"	Sept. 2	Sept. 14	3	
mbe	"	" 16	Oct. 25	12	
.. .. .	"	Oct. 28	Dec. 6	12	
.. .. .	"	Dec. 9	" 20	5	
.. .. .	1896	Jan. 6	Jan. 17	5	
er.. .. .	"	" 21	March 14	13	
owey	"	March 16	April 10	8	
.. .. .	"	April 13	" 24	5	
.. .. .	"	" 27	June 2	7	92
ry	"	June 3	" 16	2	
.. .. .	"	" 17	" 30	4	
.. .. .	"	July 1	July 14	4	
.. .. .	"	" 15	Aug. 29	10	
.. .. .	"	Aug. 31	Sept. 26	7	
.. .. .	"	Sept. 28	Oct. 9	5	
e	"	Oct. 12	Nov. 14	10	
.. .. .	"	Nov. 16	" 28	4	
.. .. .	"	" 30	Dec. 23	8	
ry	1897	Jan. 11	Jan. 23	2	69
dallet	"	" 25	Feb. 6	2	
.. .. .	"	Feb. 8	" 20	4	
.. .. .	"	" 22	March 13	6	
.. .. .	"	March 15	" 29	1	
.. .. .	"	" 29	May 10	10	
.. .. .	"	May 18	July 3	8	
.. .. .	"	July 5	" 17	3	
.. .. .	"	" 19	" 31	5	
ge	"	Aug. 3	Aug. 21	4	71
iper-Mare	"	" 23	Oct. 2	9	
.. .. .	"	Oct. 4	" 16	3	
.. .. .	"	" 18	Nov. 12	6	
.. .. .	"	Nov. 15	Dec. 8	6	
.. .. .	1898	Dec. 13	Jan. 15	6	
er	"	Jan. 17	Feb. 5	3	
.. .. .	"	Feb. 7	March 5	6	
gna	"	Mar. 7	Apr. 2	6	
loud	"	Apr. 4	" 20	2	
.. .. .	"	" 26	May 6	3	
.. .. .	"	May 16	June 3	3	
.. .. .	"	June 4	July 8	4	
.. .. .	"	July 11	" 23	4	303
er	"	" 25	Sept. 3	10	
rry	"	Sept. 5	" 17	2	
.. .. .	"	" 19	" 30	4	
.. .. .	"	Oct. 6	Nov. 19	10	
llett	"	Nov. 21	Dec. 17	8	
Carried forward	303

Centre.	Year.	School		No. of Pupils.	Total No. of Pupils each year.
		Opened.	Closed.		
		Brought forward	..	..	303
South Petherton ..	1899	Jan. 2	Feb. 3	2	
Ilminster	"	Feb. 6	" 25	5	
Crewkerne	"	" 27	March 25	6	
Yeovil	"	March 27	April 22	6	
Ilchester	"	April 24	May 6	4	
Nether Stowey ..	"	May 15	June 3	4	
Kilve	"	June 5	" 17	2	
Williton	"	" 19	July 15	8	
Roadwater	"	July 17	Aug. 5	5	
Dunster	"	Aug. 7	" 20	4	
Wiveliscombe ..	"	" 21	Sept. 23	8	
Wellington	"	Sept. 25	Oct. 14	5	
Taunton	"	Oct. 16	Dec. 23	18	
		Total ..	..	..	77
					380

On another recent occasion between sixty and seventy persons, including most of the smiths and their men for miles round, were present at the lecture.

At the conclusion of a certain number of courses in a district, a competition is held, open exclusively to pupils from the classes, and, in order to encourage regularity of attendance, only those who have attended at least eight times are entitled to compete.

The Registration Committee of the Farriers' Company admit the winners (provided they are of the requisite age) of First Prizes in these competitions to the Official Register *free of charge*, on their satisfying the Judge that they have a fair knowledge of the structure of the horse's foot, while other competitors who satisfy the Judge of their competency are admitted on payment of the usual fees (*viz.*, 1*l.* for masters, and 5*s.* for journeymen). Twenty-five years for a shoeing smith and twenty-one for a doorman are the minimum ages for registration.

During the past year competitions were held at the places named below, when the following pupils were successful:—

at Crewkerne.—

CLASS I.—NAG HORSES.

1st prize.—J. H. Shire, Combe St. Nicholas, Chard.

2nd prize.—T. Spurdle, Clapton, Crewkerne.

Reserved.—A. V. Bunday, South Petherton, Taunton.

Commended.—F. Gill, Yeovil.

CLASS II.—CART HORSES.

1st prize.—J. R. Gale, Ilchester.

2nd prize.—F. Hockey, Buckland St. Mary, Clard.

Reserved.—J. Pitt, Haselbury, Crewkerne.

November 9, at Taunton:—

CLASS I.—NAG HORSES.

1st prize.—James Grabham, Dunster.

2nd prize.—Francis Coles, Croford, Wiveliscombe.

3rd prize.—C. H. Webber, West Street, Wiveliscombe.

Reserved.—T. Temlett, Russel Place, Wiveliscombe.

CLASS II.—CART HORSES.

1st prize.—Eli Sawyer, Sampford Brett, Williton.

2nd prize.—Edwin A. Webber, West Buckland, Wellington.

3rd prize.—T. Temlett, jun., Russel Place, Wiveliscombe.

Reserved.—J. Albert Fry, Nether Stowey, Bridgwater.

Special Prizes were offered by the Wiveliscombe Committee to be competed for by pupils who had attended the School when it was held at Wiveliscombe, and these were awarded as follows:—

1st prize.—Francis Coles.

2nd prize.—C. H. Webber.

3rd prize.—T. Temlett.

XIII.—*Annual Report of the Society's Consulting Chemist*
(Dr. J. A. VOELCKER, M.A., F.I.C., &c.).

THE number of samples submitted to me by Members of the Society during 1899 shows a falling-off as compared with the previous year, the total being fifteen only, as against thirty-six in 1898. This falling-off is due mainly to the fact of only one sample of water having been submitted, whereas last year there were no less than twenty such samples. In addition to the fifteen samples sent in the ordinary course by Members, there was one consultation by letter, four samples analysed in connection with the Society's grass experiments, and fourteen samples of milk analysed for the milking prizes given at the Society's Annual Show held at Exeter.

Of feeding materials there were, in all, seven samples sent, viz. one of linseed-cake, one of decorticated cotton-cake, two of decorticated cotton-cake, two of compound feeding-cakes, and one of rice bran. The linseed-cake was pure and of fair quality, but the undecorticated cotton-cake was hardly satisfactory, and contained .65 per cent. of sand, which is more than such cake, if made from clean seed, ought to have. Of the two decorticated

cotton-cakes one was soft and well made, though not of high quality, while the other was decidedly inferior and contained a good many hard indigestible lumps, which, if not thoroughly broken up, are apt to cause trouble in feeding. The compound cakes were, of their kind, good, and the materials used in them were clean and sound. The sample of rice bran, or rather rice husk, as I would prefer to call it, was a very poor material; over 50 per cent. of it was indigestible fibre, and there was also about 10 per cent. of silica. The use of this material had been suggested to take the place of wheat bran, but, as can be well supposed, it proved a very inefficient substitute.

The one sample of mineral superphosphate sent gave $29\frac{1}{2}$ per cent. of "soluble phosphate," and, accordingly, was good; but the single sample of basic slag proved to be $2\frac{1}{2}$ per cent. deficient in phosphates as compared with the guarantee, and a suitable allowance was made by the vendors for this. "It is well to mention that there is great need of exercising caution in buying basic slag, as this not unfrequently proves to be below the quality stated when purchased, both as regards the phosphates and the "fineness" of grinding. A minimum of 80 per cent. "fineness" should be stipulated for, and a good quality of basic slag will now have from 38 to 40 per cent. of phosphate of lime.

Of miscellaneous materials, a sample of hoof meal gave $16\frac{1}{2}$ per cent. of ammonia, and one of gas lime was of good ordinary character.

The one water sent was of doubtful purity, while two samples of cider that were examined were found to be, the one good, but the other extremely acid and not in sound or fit condition for drinking. It was believed to have caused serious illness.

The list of samples analysed is as follows:—

Linseed-cake	1
Uncorticated Cotton-cake	1
Decorticated Cotton-cake	2
Compound Feeding-cakes	2
Rice Bran	1
Mineral Superphosphate	1
Basic Slag	1
Hoof Meal	1
Gas Lime	1
Milk	1
Water	1
Cider	2
Total	15

XIV.—*The Society's Exhibition at Exeter.* By THOS. F. PLOWMAN, Secretary and Editor.

THE Society's 1899 Exhibition at Exeter was opened on Wednesday, May 24, and closed on Monday, May 29.

A plan showing the situation and arrangement of the Yard will be found facing the title-page of this volume.

ANNUAL MEETING OF MEMBERS.

At the Annual General Meeting of Members, held on the third day of the Show, in the Council Pavilion, the following Report of the Council was received and adopted:—

The Council, in presenting their Annual Report, congratulate the members upon meeting once more at Exeter, where on three previous occasions the Society has received a hearty welcome.

Since the last Annual Meeting a great link with the Society's past has been severed by the death of the Right Hon. Sir Thomas Dyke Acland, Bart., and the Council desire to place on record their deep sense of the loss which the Society thereby sustained. As the author, nearly fifty years ago, of the "great revival" of the Society, endowed it with a vitality which has enabled it to extend the scope of its operations and the sphere of its usefulness far beyond the limits which the highest expectations of its original promoters assigned to them. But, great as was the service he then rendered, he was excelled by the devotion of succeeding years, for it is impossible to estimate how much the Society has owed to his distinguished ability, his untiring energy, and his generous support. As a former President of the Society, and as a Vice-President, Trustee, and Chairman of several important Committees, his invaluable assistance was ungrudgingly given, and especially in connection with the Society's Annual 'Journal,' of which he was for several years the Editor, and for a long period the guiding spirit. A fuller reference to the work accomplished for the Society by one who was no ordinary benefactor to it will be found in the current issue of the 'Journal.'

Death has also deprived the Society of another of its Vice-presidents, viz., the Duke of Northumberland, who had been a liberal supporter of it for many years.

The growth of the Society's Exhibition, and the large extent of it at the present occasion may be judged by the following statement showing the total number of entries of Live Stock and Produce in

comparision with those at the Society's two previous Meetings at Exeter :—

	Exeter, 1879.	Exeter, 1889.	Exeter, 1899.
Horses, Cattle, Sheep, and Pigs ..	661	853	997
Poultry	287	463	528
Produce .. .. .	..	141	277
Totals	948	1,457	1,802

This large increase is the more remarkable as the Society has recently restricted the number of entries which an Exhibitor can make in any one class.

In 1879 there were no competitions for Butter-making, Shearing, or Milking, but only for Shoeing, for which there were 50 entries. In 1889 there were 142 entries in these classes, and in 1899 there are 452, the latter number including the entries in the local classes, open to pupils in the Devon County Council Schools.

There has been a similar increase in other departments, including that for Implements and Machinery. For this the number of feet run of shedding and square feet of uncovered space taken in the years named were—in 1879, 9,872 feet; in 1889, 17,158 feet; and in 1899, 24,535 feet.

In 1879, the money prizes amounted to 2,259*l.*; in 1889, to 2,461*l.*; and in 1899 they reach a total of 3,243*l.*, in addition to medals and plate.

During the past year the Council have continued their efforts for the promotion of Technical Education in Agriculture by organising and conducting, on behalf of the Somerset County Council, a Cheese and a Farriery School, which are being continued during the current year.

The Council have also followed up the practical and scientific investigations, initiated by the Society a few years since, in connection with Cheese-making and Cider-making, the experience of previous years having fully satisfied them of the value of these researches. Particulars of the results obtained have been published in the recent issue of the Society's Annual 'Journal.'

The experiments upon the improvement of grass land, which were set on foot in 1895, are in progress, and attention is especially being directed to the cause and effect of "tartness" in land.

The Board of Agriculture has once more borne testimony to the utility of the experimental and research work of the Society by awarding a grant of 300*l.* in aid of it.

The Council have particular pleasure in acknowledging the friendly co-operation, in promoting the success of the Exeter Meeting, of the Devon County Agricultural Association and the Exeter Horse Show Society, who have suspended their shows for the year, and have contributed to the prize list. Under these circumstances your Council felt that they would be acting in accordance with the feelings of the Members generally if they conferred Members' privileges for the Exeter Meeting upon the Members of these Societies, and this has accordingly been done.

The Council have also gratefully to acknowledge the receipt of special prizes from the Shire Horse Society, the Hunters' Improvement Society, the English Jersey Cattle Society, the English Guernsey Cattle Society, the Kerry and Dexter Cattle Society, the Shorthorn Society, the British Berkshire Society, His Grace the Duke of Marlborough, Captain Best, R.N., Sir James Blyth, Bart., Sir Walter Gilbey, Bart., a Member of the English Jersey Cattle Society, and Mr. R. Dunsford.

The Council have accepted an invitation to hold the Annual Meeting in 1900 at Bath, and in 1901 at Croydon.

The Council have much pleasure in recommending that the Most Hon. the Marquess of Bath be elected President for the ensuing year; that His Grace the Duke of Northumberland and Mr. E. W. Williams be elected Vice-Presidents of the Society; and that the gentlemen named on the Agenda Paper be elected Members of Council for the years 1899-1901, in room of those retiring by rotation.

The Council desire to express their thanks to the inhabitants of the city and neighbourhood of Exeter, and especially to the Members of the Local Committee, for the cordiality with which they have welcomed the Society, and the energy they have displayed in promoting the success of the Meeting.

In conclusion, the Council would earnestly impress upon every Member of the Society the desirability of making an effort to increase the roll of membership, by bringing under the notice of others, especially those interested in the land, the advantages the Society offers. The increasing demand upon its funds, resulting from the additional work which, in the direction of experiment and research, it has in recent years taken upon itself, renders it more than ever necessary that its income should be fully maintained. But, beyond this, an increasing membership affords substantial evidence of vitality which is in itself a source of influence and strength.

Resolutions were passed adopting the recommendations contained in the Report with reference to the appointment of officers; and special votes of thanks were accorded to the Local Committee, the Judges, the Railway Companies, and the retiring President.

ENTRIES.

The following is a comparative statement of the entries in the Stock and Produce classes in 1879 and 1889 (when the Society previously visited Exeter), 1898, and 1899 :—

	Exeter, 1879.	Exeter, 1889.	Cardiff, 1898.	Exeter, 1899.
HORSES :—				
Agricultural	28	31	68	58
Hunters, Hacks, Ponies, and } Harness }	95	118	124	175
	— 128	— 149	— 192	— 233
CATTLE :—				
Devons	39	64	42	52
South Devons .. .. .	..	..	..	23
Shorthorns	43	38	55	72
Herefords	33	56	45	31
Sussex	48	48	22	11
Jersey	50	152	99	113
Guernsey	38	68	66	86
Black Welsh .. .. .	..	..	18	..
Aberdeen Angus .. .. .	..	..	8	..
Kerry and Dexter .. .. .	..	..	25	30
Dairy .. .. .	..	2	2	..
Butter and Milk Tests .. .. .	..	16	31	35
	— 250	— 444	— 413	— 453
SHEEP	207	182	151	192
PIGS	81	78	101	119
POULTRY	287	468	440	528
FARM PRODUCE :—				
Cheese .. .. .	..	46	97	69
Butter and Cream .. .. .	..	95	124	138
Cider .. .. .	..	..	44	70
	..	— 141	— 265	— 277
Total	948	1,457	1,562	1,802

A list of the Awards, names of the Judges, &c., will be found on pages i.-lxv. of the Appendix to this volume.

CIDER.

A separate Report dealing with this section of the Exhibition will be found on pages 152-165.

PRIZES.

The following table shows how the money prizes were apportioned at the 1879, 1889, 1898, and 1899 Exhibitions :—

	Exeter, 1879.			Exeter, 1889.			Cardiff, 1899.			Exeter, 1899.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
s	430	0	0	393	0	0	780	0	0	765	0	0
e	986	0	0	1,098	0	0	1,278	10	0	1,263	10	0
p	491	0	0	450	0	0	415	0	0	515	5	0
.. ..	160	0	0	200	0	0	200	0	0	205	0	0
try	153	0	0	171	0	0	170	11	0	169	10	0
ons	83	0	0									
ying .. ..	..			143	0	0	226	15	0	216	15	0
(Local) .. ..	..			..			..			41	0	0
ing	6	6	0	6	6	0	22	0	0	22	0	0
(Local) .. ..	..			..			..			19	10	0
ring .. ..	..			..			..			25	15	0
Total	2,259	6	0	2,461	6	0	3,092	16	0	3,243	5	0

The Money Prizes in 1899 were contributed as follows :—

	£	s.	d.
By the Bath and West and Southern Counties Society	2,818	5	0
„ Devon County Agricultural Association	150	0	0
„ Devon County Council (Local Prizes)	86	5	0
„ Exeter Horse Show Society	75	0	0
„ English Jersey Cattle Society	31	0	0
„ A Member of the English Jersey Cattle Society	30	0	0
„ Kerry and Dexter Cattle Society	10	10	0
„ Captain J. C. Best, R.N.	10	0	0
„ Shorthorn Society	20	0	0
„ Mr. R. Dunsford	5	5	0
„ British Berkshire Society	5	0	0
„ English Guernsey Cattle Society	2	0	0
	<u>3,243</u>	<u>5</u>	<u>0</u>

Gold, Silver, and Bronze Medals were also given by the Society, and Medals or Plate by the Shire Horse Society, Hunters' Improvement Society, Sir J. Blyth, Bart., the Duke of Marlborough, English Jersey Cattle Society, and English Guernsey Cattle Society. (Particulars of these Prizes may be found in the list of Awards on pages iii.-lxv. of the Appendix to this volume.)

IMPLEMENTS.

The following is a comparative statement of the number of sets run of Shedding provided for Implements, Machinery, and of the number of square feet of open space occupied by exhibits unsuitable for Shedding :—

	Exeter, 1879.	Exeter, 1889.	Cardiff, 1898.	Exeter, 1899.
Machinery in Motion feet run	826	616	1,120	1,050
Agricultural Implements	3,244	3,465	3,625	3,656
Seeds, Cattle, Foods, Artificial } Manures, &c. }	521	559	875	895
Carriages and Miscellaneous } Articles }	1,125	785	1,010	945
Total feet run	5,716	5,866	6,630	6,546
Open Space for Greenhouses, &c. sq. feet	4,156	11,792	15,092	17,989

MISCELLANEOUS DEPARTMENTS.

A fully equipped Working Dairy formed as usual a prominent feature of the Show. The Butter-making Competitions were held in it, and butter-making demonstrations were given daily.

There were also Shoeing, Shearing, and Milking Competitions, and Exhibitions of Pictures, Art Manufactures, and Flowers. The customary Art Union was held, and a list of the prize winners and of the pictures chosen will be found on pages lxvi., lxvii., of the Appendix to this volume.

COMPARATIVE STATEMENT OF ENTRIES FOR COMPETITIONS
FOR MEN AND WOMEN

	Exeter, 1879.	Exeter, 1889.	Cardiff, 1898.	Exeter, 1899.
Butter Making	0	92	103	99
Do. (Local)	0	0	0	143
Shoeing	50	50	81	79
Do. (Local)	0	0	0	43
Shearing	0	0	0	0
Do. (Local)	0	0	0	76
Milking	0	0	17	13
	50	142	201	453

Musical performances were given by the Bands of the Coldstream Guards and the Royal Marines (Plymouth Division).

The usual Sunday Service, at which there was a large attendance of herdsmen and others engaged in the Yard, was held in the Working Dairy. It was conducted by the Society's Chaplain (the Rev. Canon Quirk), who was assisted by the Rev. T. J. Ponting (Vicar of Heavitree), the Sermon being preached by the Lord Bishop of Exeter (Dr. Bickersteth).

ATTENDANCE.

The total number of persons paying for admission was 923, as against 55,602 at Cardiff in the previous year.

A comparative statement of attendances since 1852 will be found on pages lxxix., lxxx., of the Appendix to this volume.

1.—*The Milk and Butter Test Cattle Classes at the Exeter Exhibition.* By Dr. J. A. VOELCKER, M.A., F.C.S., Mr. ERNEST MATHEWS, and Mr. J. D. TOOGOOD PARSONS, jun.

At the Society's Exhibition, held last year at Exeter, there were five classes for dairy cattle, to be judged by either a milk or a butter test.

MILK TEST CLASSES.

With respect to these classes, the Society's Consulting Chemist (Dr. Voelcker) reported as follows:—

"For the prizes given for cows of any breed or cross yielding the largest quantity of milk containing 12·25 per cent. of total solids (of which not less than 3·25 per cent. shall be fat), twelve animals were entered.

"These were divided into two classes—(a) Cows under 900 lbs. live weight; and (b) Cows 900 lbs. live weight and over. The cows were milked dry on the evening of the 26th of May, and the milkings for the purpose of the Competition were taken at 7 A.M. and 5 P.M. on May 27th.

"Of the twelve entries, seven came up for competition, and of these only one, No. 377, was found to be eligible for the class of cows under 900 lbs. live weight. This cow yielded in the two milkings 40 lbs. of milk, containing nearly 14 per cent. of total solids, and over 4½ per cent. of fat, and to it the first prize was awarded.

"In the class for cows 900 lbs. live weight and over, three animals were disqualified on account of the low quality of milk they yielded. The milk of No. 266 was below the standard at both morning and evening milkings, and that of Nos. 567 and 570 was wretchedly poor at the morning milking, the total solids being only 11·5 per cent. and 10·25 per cent., and the fat 7 per cent. and 1·7 per cent. respectively.

"Very probably the cold and wet night affected the animals materially, but the low quality was also due to injudicious feeding, and the desire to secure a prize in the competition by getting a heavy yield.

"The first prize was won by Mr. Spencer's Shorthorn 'Model Maid,' which gave in the two milkings 56 lbs. 15 ozs. of milk. The second prize winner was also a Shorthorn, No. 565, belonging to Lord Rothschild, the total produce of milk being 56 lbs. 2 ozs. at the two milkings, this being on each occasion above the standard quality.

"Mr. Spencer also won the third prize with his Kerry cow, 'Abraham Belladonna,' No. 568, the milk of which showed

Class.	No.	Owner and Cow.	Breed.	Age.	Quantity of Milk.				Quality of Milk.				Award.		
					Thursday morning.		Thursday evening.		Total.	Thursday morning.		Thursday evening.			
					lbs. ozs.	lbs. ozs.	lbs. ozs.	lbs. ozs.		Fat.	Solids.	Per cent.		Per cent.	
92	377	Mr. J. Bruton's "Mina 2nd"	Jersey	2	22	14	17	2	40	0	3.75	13.09	5.10	14.47	1st Prize.
	266	Mr. G. F. King's "Countess 26th"	Shorthorn	6	27	12	23	13	51	9	2.45	11.49	3.15	12.38	{Deficient in quality.
	565	Lord Rothschild's "Moppy Gem 2nd" ..	Shorthorn	8½	29	14	21	4	51	2	3.25	12.25	3.60	12.32	2nd Prize.
	567	Lord Rothschild's "Butterfly 7th"	Shorthorn	9	35	0	26	8	61	8	2.70	11.50	3.80	12.57	{Deficient in quality.
93	568	J. F. Spencer's "Babraham Belladonna" ..	Kerry	7	16	2	12	0	28	2	4.40	13.22	4.20	12.70	3rd Prize.
	569	J. F. Spencer's "Model Maid"	Shorthorn	7	31	4	25	11	56	15	3.00	11.98	4.22	12.97	1st Prize.
	570	W. J. Hoaken's "Pride of Osarwin"	Cross-bred	..	32	8	29	4	61	12	1.70	10.25	4.40	12.95	{Deficient in quality.

cent. and 4.2 per cent. of fat at the respective
preceding table gives the details of the results."

BUTTER TEST CLASSES.

English Jersey Cattle Society offered prizes for cows of
red or cross, obtaining the greatest number of points by
official test of the separator and churn, judged by the
points adopted by that Society.

There were two classes, one for animals under 900 lbs. live
and the other for animals of 900 lbs. live weight

Prizes in each class were, first, 10*l.*; second, 3*l.*; third, 2*l.*
Silver, and bronze medals were offered in addition for the
best Jersey cows, entered or eligible for entry in the English
Herd Book, obtaining the greatest number of points in the
test as a special prize of 1*l.* for the best quality of butter
judged by any Jersey cow awarded a medal, prize, or certificate
in the tests.

Mr. Ernest Mathews reported as follows:—

Of eighteen entries received for the open Butter Test
amounting to 30*l.*, offered by the English Jersey Cattle
Society only fourteen animals arrived in the Yard for competi-
tion, ten Jerseys, two Shorthorns, one Kerry, and one
red. The number in each class was seven, 900 lbs. live
being the dividing line.

The cows were milked out on Wednesday evening, May 24th,
beginning about 5 o'clock, the milk of Thursday being taken
for test.

Separation through a Farmer's Alpha Steam Turbine
took place on Thursday evening, the milk being heated
for 24 hr.

Churning commenced on Friday morning at 7.20, and was
finished at 10.32. The morning was cold, and a north-west
wind blowing through the dairy made the churning very difficult,
temperature falling in some cases to 44°.

First, second, and third prizes in the light weight class,
first and second prizes in the heavy weight class,
Mr. Watney, who also took the gold, silver, and bronze
medals offered for Jersey cows only; the third prize in the
heavy weight class being awarded to Mr. Spencer's Shorthorn.

It must be mentioned here, however, that all the other cattle
shown in the inspection classes on the Wednesday,
and consequently they could hardly be said to compete on
terms with those which had escaped the ordeal of the

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Show-ring. I would venture to suggest that in future competitions it would be preferable to postpone the trials, if practicable, for one day longer.

"The following tables give the averages of the prize-winners, and also of the different breeds :—

TABLE I.—PRIZE-WINNERS.

	Days in Milk.	Yield of Milk.	Yield of Butter.	Ratio lb. Milk to lb. Butter.	Points.
		lbs. oz.	lbs. oz.		
5 Jerseys averaged	105	31 5	2 2½	14·62	40·29
1 Shorthorn	54	56 15	2 0	28·46	33·40

TABLE II.

10 Jerseys averaged	77	29 13	1 11½	16·94	31·93
2 Shorthorns averaged	54	54 4	1 11½	31·56	28·90
1 Kerry	65	28 2	1 5	21·42	23·50
1 Cross-bred	34	61 12	1 14½	32·13	30·75

"No. 572 cow unfortunately met with an accident in the grain, which seriously affected one of her quarters; but I did not feel justified in allowing her to be withdrawn from the test. Her poor yield of milk was undoubtedly attributable to this cause.

"A special prize of 30*l.* was also offered by a Member of the English Jersey Cattle Society for the cow of any age or breed yielding the greatest weight of butter in the Butter Test classes at any two of the following Shows in 1899: Bath and West and Southern Counties Society's Show at Exeter, Tring Agricultural Society's Show, and the London Dairy Show.

"The butter was most kindly judged for me by Mr. Gibbons, and illustrated the difference that may arise from feeding. Five cows—Nos. 575, 576, 578, 579, 580—came from one herd, Nos. 385 and 402 from another, and 568 and 569 from a third.

"The prize for the best butter was won by Dr. Watney's gold medal cow, No. 576, and it will be noticed that all the butter made from three of his cows was good, while that from his other two animals, which had been in milk 172 and 137 days respectively, was slightly poorer in quality. In the other cases the faults in the butter appeared directly traceable to the feeding. Nos. 385 and 405 both produced a pale butter for

The Milk and Butter Test at the Exeter Exhibition. 149

No. in Catalogue.	Exhibitor.	Name of Cow.	Breed.	Live Weight.	Date of Birth.	Date of last Calf.	Number of days in Milk.	Milk Yield.	Butter Yield.	1st, viz., lb. Milk to lb. Butter.	Colour and Quality of Butter.	No. of Points for Butter.	of Points for Lactation.	Total No. of Points.	Awards.	
				Lbs.			lb. oz.	lb. oz.			Colour.	Quality.			{ 1st, 101., also 11. special butter prize and gold medal.	
576	Dr. H. Watney	Marryatt's Lass	Jersey	823	Nov. 5, '93	Feb. 17, '99	97 39	2 2	7	16 05	Good	Excellent	39 00	5 70	44 70	
579	Dr. H. Watney	Sharab	"	677	Dec. 16, '96	Dec. 4, '98	172 27	6 1	124 15	23	Fair	Fair	28 75	12 00	40 75	2nd, 31. and bronze medal.
578	Dr. H. Watney	Lady of the Sunny Isles	"	881	Jan. 20, '92	Mar. 20, '99	66 23	3 2	24 10 67		Good	Fair	34 74	2 60	37 35	3rd, 21.
573	A. Gibbs	Buttercup 3rd	"	888	Apr. 23, '92	Apr. 23, '99	32 31	0 1	84 20 24		Pale	Fair	24 50	..	24 50	
585	W. B. Roderick	Geniecel 2nd	"	983	June 2, '93	Mar. 21, '99	65 29	7 1	104 17 60		Inferior	Medium	26 75	2 50	29 25	
402	W. B. Roderick	Reech Lass	"	808	Mar. 2, '96	Apr. 14, '99	41 28	4 1	43 21 78		Inferior	Medium	20 75	..	10 20 85	
572	Earl Cadogan	Lillian	"	819	Apr. 13, '90	Apr. 21, '99	34 16	8 0	174 21 55		Good	Good	12 25	..	12 25	
CLASS 95.—COWS OF ANY BREED OR CROSS, 900 LBS. LIVE WEIGHT OR OVER.																
580	Dr. H. Watney	Sherbet	Jersey	998	Nov. 22, '90	Apr. 8, '99	52 42	12 2	9	16 08	Excellent	Fair	41 00	1 20	42 20	1st, 101. and silver medal.
578	Dr. H. Watney	Sabeau 2nd	"	900	Dec. 21, '95	Jan. 8, '99	137 24	5 1	108 14 54		Medium	Medium	26 75	9 70	36 45	2nd, 31.
569	J. F. Spencer	Model Maid	Shorthorn	1434	7 years	Apr. 1, '99	54 36	15 2	6	28 46	White	Bad	32 00	1 40	33 40	3rd, 21.
266	G. F. King	Countess 26th	"	1325	May 16, '93	Apr. 1, '99	54 51	9 1	7	35 56	Fair	Fair	23 00	1 40	24 40	
568	J. F. Spencer	Babraham Belladonna	Kerry	1015	May 14, '92	Mar. 21, '99	65 38	2 1	5	21 42	White	Bad	21 00	2 50	23 50	
570	W. J. Honken	Pride of Carwin	Cross-bred	1218	7 years	Apr. 21, '99	34 61	12 1	144 32 73		Poor	Bad	30 75	..	30 75	
573	Mrs. McIntosh	Zenobia 34th	Jersey	915	Oct. 16, '91	Mar. 6, '99	80 33	4 11	21 48		Good	Excellent	27 00	4 00	31 00	

Jerseys, and the quality was not good, both samples being identical. The same may be said of the butter from Nos. 568 and 569, a Kerry and a Shorthorn, the butter being white in colour and bad in quality.

"In conclusion, I desire to cordially thank Mr. J. T. Gibson, the Steward of the Butter Test, for his unwearied attention and assistance, and also to express my gratitude to the Bath and West and Southern Counties Society for their excellent arrangements, and to the Misses Benjafield, Jenkins, and all others who assisted in the churning."

The results are shown in the tabulated form on page 149.

The English Guernsey Cattle Society offered prizes for cows or heifers, entered in the English Guernsey Cattle Society's Herd Book, yielding the largest quantity of butter by the practical test of the separator and churn. The prizes were as follows:—First, silver cup, value 5*l.*; second, silver medal and 1*l.*; third, bronze medal and 1*l.*

The Judge (Mr. J. D. Toogood Parsons, jun.) reported as follows:—

"The entries in this class were numerically the same as last year, numbering five only, of which on each occasion one was withdrawn, leaving the small total of four to compete.

"It will be seen from the table on page 151 that points are now given for period of lactation, which is a decided improvement. I trust that the English Guernsey Cattle Society and the Bath and West and Southern Counties Society will continue to encourage, by means of these special classes, the testing of cows for butter production.

"Breeders are now using more discretion in the selection of their sires, and this, in time, will, I think, enable them to show a record that will compare favourably with that of the sister breed. The Butter Tests have to a large extent been responsible for this improvement in the Jersey, which has been brought to its present state by years of careful breeding.

"My best thanks are due to Mr. Gibson, the Misses Benjafield and Jenkins, and their assistants for their able and willing help in the Working Dairy.

The Milk and Butter Test at the Exeter Exhib

GUERNSEY BUTTER TEST.

No. in Catalogue.	Name of Cow.	Exhibitor.	Date of Birth.	Date of last Calf.	Days in Milk.	Milk Yield.			Ratio —lbs. Milk to lbs. Butter.	Colour and Quality of Butter.		Points for—		Awards.
						lb. oz.	lb. oz.	lb. oz.		Colour.	Quality.	Butter.	Lactic Acid.	
491	Lady Jane of Ampthill	A. H. Wingfield	Apr. 18, '83	Feb. 12	102	34	10	1 94	21.94	Fair	Fair	25.25	6.20	31.45, 1st Prize.
492	Claremont Hilda ..	A. H. Wingfield	Jan. '93	Mar. 28	58	25	4	1 34	20.20	Good	Very good	19.50	1.80	21.30
531	Claremont Larkspur ..	W. H. Fowler	Sept. 21, '95	May 5	20	46	1	1 144	24.36	Very good	Excellent	30.25	..	30 25 2nd Prize.
532	Claremont Gertrude ..	J. Bradbeer	Mar. 8, '93	May 7	18	44	9	1 10	27.42	Very good	Good	28.00	..	28.00 3rd Prize.

XVI.—*The Society's 1899 Exhibition of Cider.*

By F. G. FARWELL, Steward.

It may be remembered that last year the Society determined, in order to meet the views of those makers producing cider of a low alcoholic strength, to divide the prizes offered at the annual Exhibition into two sections, viz.: one for cider containing not less than 4 per cent. of alcohol, and the other for cider containing less than 4 per cent., with the condition that any exhibit entered in a class for which it was not eligible, either from containing too much or too little alcohol, would be disqualified. The entries for the Exeter Show were 70 against 44 at Cardiff in 1898, so the alteration may be said to have been justified.

These entries were classified as follows:—

CIDER MADE IN DEVON.

Class.	Not less than 4 per cent.	Entries.	Class.	Less than 4 per cent.	Entries.
148.—Cask of Cider	8		150.—Cask of Cider	4	
149.—12 Bottles of Cider ..	5		151.—12 Bottles of Cider ..	3	

CIDER MADE IN HEREFORDSHIRE.

152.—Cask of Cider	1	154.—Cask of Cider	2
153.—12 Bottles of Cider ..	1	155.—12 Bottles of Cider ..	2

CIDER MADE IN SOMERSET.

156.—Cask of Cider	11	158.—Cask of Cider	6
157.—12 Bottles of Cider ..	10	159.—12 Bottles of Cider ..	6

CIDER MADE IN OTHER COUNTIES.

160.—Cask of Cider	2	162.—Cask of Cider	1
161.—12 Bottles of Cider ..	3	163.—12 Bottles of Cider ..	5
	<hr/>		<hr/>
	41		29
	<hr/>		<hr/>

Total entries containing not less than 4 per cent. of alcohol ..	41
“ “ less than 4 per cent. of alcohol ..	29
	<hr/>
	70
	<hr/>

In order to allow time for the cider to be analysed, all entries had to be delivered into the Showyard not later than 6 P.M. on Saturday, May 13th. The cases containing the bottles were then unpacked, and both casks and bottles placed in position. Samples were taken from each exhibit by the Steward on Monday, May 15th, and were forwarded on by him the same evening to Mr. F. J. Lloyd, F.C.S., for analysis—the samples being sent in bottles specially provided by Mr. Lloyd for the purpose.

s five of the entries were, owing to some delay in transit, not delivered in time for samples to be taken, they were disqualified from competition. On Monday, May 22nd, particulars of these analyses were received (see Appendices A and B). It was then found that 14 of the exhibitors were disqualified: for having less than 4 per cent. of alcohol when entered in classes where 4 per cent. was the minimum, and 6 in classes requiring more than 4 per cent. where that was the maximum. It is almost incomprehensible how exhibitors can make such mistakes in their entries when, as has been often pointed out, it is so easy for any maker to discover the percentage of sugar and alcohol in the fermenting juice by the use of an hydrometer, and by reference to Mr. Lloyd's tables, specially prepared for that purpose. A small percentage under or over the 4 per cent. might be excusable; but when exhibitors enter cider, containing on analysis over 6 per cent. of alcohol in classes where the maximum is under 4 per cent., it is only charitable to conclude that they must have made the entry in the wrong class by mistake.

Mr J. H. Hill, of Newtake, Staverton, near Totnes, was the judge appointed by the Society, and he began his task on the morning of the first day of the Show, Wednesday, May 24th. Mr. Hill is a gentleman well known in the county of Devon as a cider-maker, and the Society were to be congratulated on obtaining the services of such an efficient and painstaking judge.

In the Devon classes for cider in cask containing not less than 4 per cent. of alcohol, Mr. J. Mortimer took the first prize with a nice soft cider in good condition; the second prize going to Mr. G. M. Lee, and the reserve to Sir John Heathcote Amory. In the bottle class, Mr. E. Palmer gained an easy first prize; Mr. H. Batting being placed second. In the classes containing less than 4 per cent., Sir John Heathcote Amory obtained a first with a good cider in cask; the second going to Mr. Haydon. In the bottle class, Mr. Haydon was first, and Messrs. Bowden and Coombe second; both these ciders were good, but Mr. Haydon's was the fresher and brighter of the two.

In the Hereford classes for cider containing not less than 4 per cent., Mr. Watkins, who was the only exhibitor in both classes, was, unfortunately, disqualified, owing to his cider not having been delivered to the Yard in time for samples to be taken for analysis. This was due to no fault of Mr. Watkins, as he appears to have sent his exhibits away from Hereford in plenty of time for delivery. In the classes for cider in cask containing 4 per cent., Mr. Watkins being disqualified, Mr. Bazley,

the only other competitor, had a walk over. Mr. Bazley's cider was, however, quite entitled, by its quality, to a prize. In the class for bottled cider under 4 per cent. of alcohol no award was made; Mr. Watkins being disqualified for the reason stated, and Mr. Bazley for having more than 4 per cent., the analysis showing 5·15 per cent.

The Somerset classes always fill well, and this year was no exception to the rule. In the classes for cider containing not less than 4 per cent. of alcohol there were 11 entries for cider in cask and 10 for cider in bottle, and in the classes under 4 per cent. there were 6 for casked and the same number for bottled cider. In all these classes the Judge had a difficult task. In the cask class, containing not less than 4 per cent., he considered all the entries worthy of commendation, and was particularly struck with the remarkable uniformity in the excellence and character of the whole of the cider. In this class, Mr. W. T. S. Tilley took first prize, Messrs. Crofts and Son second, and Messrs. Waterman and Son were reserved. In the bottle class the Judge again commended all the exhibits, remarking that it was a splendid class. Mr. W. T. S. Tilley took first prize, Messrs. Crofts and Son second, and Messrs. Waterman were reserved. A reference to the Appendices at the end will show that the cider in cask and in bottle of each exhibitor in these classes was practically made from the same apples.

In the classes under 4 per cent., Mr. W. T. S. Tilley again secured a first prize for cider in cask, Messrs. C. Osborn and Son taking the second; while, for bottled cider, Mr. W. T. S. Tilley again took first and Mr. Davis second prize.

In the classes open to counties other than Devon, Hereford, and Somerset, Messrs. Rout and Son were awarded a first prize for cider in cask containing not less than 4 per cent. of alcohol; but no first prizes were awarded in any of the other classes, as the Judge did not consider any of the exhibits to be of sufficient merit. He, however, awarded a second prize to Messrs. Slatter and Co., for bottled cider containing less than 4 per cent.

All the winners of first prizes, ten in number, had then to compete for the championship, and here the Judge had no easy task. One by one the exhibits were weeded out till only four remained. Over these Mr. Hill spent considerable time, eventually awarding the championship to Mr. W. T. S. Tilley, who proved to be the exhibitor of all four samples, for his bottled cider containing not less than 4 per cent. of alcohol.

Mr. Tilley is therefore to be congratulated upon carrying off the blue ribbon of the Society in the cider classes for two years in succession.

analyses of the apples with which the Gold Medal was
are as follows :—

e of Apple.	Proportion of each variety.	Sp. Gr.	Solids.	Acid.	Sugar.	Tannin.
Jersey ..	$\frac{1}{4}$	1·0611	15·52	·15	13·58	·24
Jersey ..	$\frac{1}{4}$	1·0581	14·68	·22	13·25	·15
on Black ..	$\frac{1}{8}$	1·0672	16·60	·61	14·08	·11
adbury ..	$\frac{1}{8}$	1·0535	12·54	·18	11·76	·21
..	$\frac{1}{4}$	1·0587	14·68	·13	13·33	·22

Tilley's cider in cask was made from precisely the same
as the above named, while that under 4 per cent. was
from the following :—

e of Apple.	Proportion of each variety.	Sp. Gr.	Solids.	Acid.	Sugar.	Tannin.
Jersey	$\frac{1}{4}$	1·0660	16·14	·16	14·92	·24
adbury	$\frac{1}{8}$	1·0539	12·68	·96	10·74	·174
s	$\frac{1}{8}$	1·0554	13·58	·31	12·19	·19
..	$\frac{1}{8}$	1·0560	13·44	·43	12·34	·16
ose Pippin	$\frac{1}{4}$	1·0612	14·62	·32	11·05	

s again a matter of regret that the Herefordshire cider
not better represented, there being only two exhibitors
that county.

s satisfactory to find that the Somerset exhibitors are not
ling to learn and profit by the lessons taught at the
y's experiment station at Butleigh. More than one-half
m had at various times visited Butleigh, and it was
ring to hear the deep obligations expressed by them to the
y, to Mr. Neville Grenville, and to Mr. Lloyd for the
tage this research work in cider-making had been to them.
hibitor stated that he had visited Butleigh, had carefully
ed the cider-making and all the object lessons connected
t, and after studying the various books and records kept
arted making cider on the same system, with the result
e had gained two second prizes in the following year. He

that before he began making cider on the improved
d he was unable to obtain more than 8*d.* per gallon, but
e could now sell all he could make for 1*s.* per gallon.
made about 300 hogsheads annually this extra 4*d.* per
represented a considerable sum.

ing the first three days of the Show, many makers of

cider and others interested in the cider trade visited the Pavilion, with the evident intention of learning all they could of the methods adopted at Butleigh. The facilities given by the Society for tasting the various exhibits were much appreciated, and the little crowds round Mr. Neville Grenville and Mr. Lloyd bore testimony to the intelligent interest of the majority of the listeners in the short impromptu lectures which were given. On the other hand, the ignorance of some was almost amusing. One individual, in particular, laid down the extraordinary doctrine that the natural sugar in cider had nothing whatever to do with the formation of alcohol, but merely produced acid. During the last two days of the Show (the shilling ones) the main impression in the bucolic mind was that the exhibition contained a certain quantity of good liquor to be had for the asking—an expectation which in order to avoid future disappointments, it may be well to state was not realised.

APPENDIX A.—ANALYSES.

Class.	No.	Name of Exhibitor.	Specific Gravity at 60° F.	Alcohol by Volume.	Acidity.	Solids per cent.	Award.
148	1	Sir J. H. Amory, Bart.	1·023	4·10	·54	6·76	Reserve.
	2	W. H. Batting	1·034	4·10	·65	9·78	
	3	J. M. Cume & Sons ..	1·032	2·70	·40	8·67	
	4	F. H. Evans	1·034	2·30	·55	8·87	
	5	C. Haydon	1·022	3·50	·40	6·46	2nd Prize. 1st Prize.
	6	G. M. Lee	1·017	5·00	·33	5·65	
	7	J. Mortimer	1·034	4·15	·45	7·43	
	8	W. K. Wyatt	1·034	2·85	·55	9·06	
149	9	Sir J. H. Amory, Bart.	1·018	5·30	·64	5·72	2nd Prize.
	10	W. H. Batting	1·025	4·15	·65	7·08	
	11	F. H. Evans	1·034	2·60	·56	8·85	
	12	C. Haydon	1·023	3·80	·40	6·50	
	13	E. Palmer	1·020	5·80	·40	6·35	1st Prize.
150	14	Sir J. H. Amory, Bart.	1·036	2·80	·52	9·72	1st Prize.
	15	W. H. Batting	1·029	3·70	·65	7·74	2nd Prize. 2nd Prize. 1st Prize. H. C.
	16	J. M. Cume & Sons ..	1·032	2·60	·40	8·62	
	17	C. Haydon	1·027	2·85	·38	7·91	
	18	Bowden and Coombe	1·040	2·45	·72	10·02	
151	19	C. Haydon	1·031	2·70	·40	8·40	1st Prize.
	20	W. K. Wyatt	1·034	2·50	·65	9·07	
	21	J. Watkins	Disqualified for late delivery into Yard.				
152	22	J. Watkins	Disqualified for late delivery into Yard.				
154	23	J. Bazley	1·032	3·55	·46	9·03	1st Prize.
	24	J. Watkins	Disqualified for late delivery into Yard.				
155	25	J. Bazley	1·023	5·15	·65	6·80	H. C.
	26	J. Watkins	Disqualified for late delivery into Yard.				
156	27	W. T. Allen	1·020	5·95	·32	7·13	H. C.
	28	D. J. Crofts & Son ..	1·022	5·50	·30	6·86	V. H. C.
	29	D. J. Crofts & Son ..	1·026	4·90	·29	7·95	2nd Prize.

No.	Name of Exhibitor.	Specific Gravity at 60° F.	Alcohol by Volume.	Acidity.	Solids per cent.	Award.
30	H. J. Davis	1·025	4·45	·40	7·12	C.
31	T. Pitman	1·020	4·65	·28	6·17	C.
32	R. W. Scott	1·021	4·50	·35	6·18	C.
33	R. W. Scott	1·017	4·80	·41	5·07	C.
34	J. H. Symes	1·024	4·45	·48	6·56	C.
35	W. T. S. Tilley	1·025	4·10	·30	7·22	1st Prize.
36	H. Tucker	1·024	3·40	·40	6·51	
37	Waterman & Son	1·024	5·70	·42	7·90	V. H. C.
38	W. T. Allen	1·019	6·15	·35	6·30	C.
39	W. T. Allen	1·021	5·80	·33	6·96	C.
40	D. J. Crofts & Son	1·023	5·95	·38	7·38	V. H. C.
41	D. J. Crofts & Son	1·024	5·25	·36	7·48	2nd Prize.
42	H. J. Davis	1·023	6·50	·41	6·94	H. C.
43	R. W. Scott	1·018	4·50	·34	5·39	C.
44	J. H. Symes	1·028	4·35	·45	7·67	C.
45	W. T. S. Tilley	1·020	4·70	·35	6·49	1st Prize and Champion Gold Medal
46	H. Tucker	1·031	2·45	·33	7·82	
47	Waterman & Son	1·026	5·70	·42	8·15	Reserve and V. H. C.
48	D. J. Crofts & Son	1·026	4·80	·42	7·54	
49	H. J. Davis	1·023	4·90	·47	6·62	
50	C. Osborn & Son	1·030	3·40	·50	7·90	2nd Prize.
51	W. T. S. Tilley	1·032	2·90	·36	8·28	1st Prize.
52	H. Tucker	1·019	3·80	·35	5·26	H. C.
53	Waterman & Son	1·010	6·75	·44	4·36	
54	D. J. Crofts & Son	1·026	4·80	·46	7·53	
55	H. J. Davis	1·026	3·95	·41	7·11	2nd Prize.
56	W. T. S. Tilley	1·033	2·85	·28	8·47	1st Prize.
57	H. Tucker	1·024	3·50	·34	6·36	H. C.
58	Waterman & Son	1·014	6·40	·37	5·19	
59	F. Bowerman			Absent.		
60	R. Rout & Son	1·009	6·15	·40	3·78	1st Prize.
61	H. Thomson	1·015	4·45	·56	5·20	
62	R. Rout & Son	1·003	7·45	·40	2·37	
63	R. Rout & Son	1·010	6·15	·42	4·11	
64	H. Thomson	1·015	5·55	·71	4·81	
65	Swanley Cider Co.	1·030	3·70	·61	7·97	
66	J. W. Simmons	1·037	1·95	·64	9·20	
67	J. Slater & Co	1·039	2·90	·45	10·76	2nd Prize.
68	Swanley Cider Co.	1·037	3·00	·55	9·75	
69	Swanley Cider Co.	1·030	3·50	·45	8·00	
70	H. Thomson	1·034	2·40	·43	9·34	

APPENDIX B.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
148. Cider made in Devon. <i>Cask containing not less than 4 per cent. of alcohol.</i>	1	Mixed	Sp. gr. of juice, 1·065	Alluvial on red sandstone. Clay.	Sheep folded in orchard.
	2	Mixed .. .. .	.. .. .	.. .. .	Orchards not manured.
	3	Pocket Apples, Butter Box, Broullyst Bitter Sweet, Fair Maid of Devon, and White Bitter Sweet, in equal quantities.	Trees blossom in May; fruit ripens in October. Nearly all are good bearers, and of a hardy nature. The weight of the apples vary from 4 to 6 to 1 lb. Sp. gr. of juice, 18 to 20.	Light loam.	Farmland manure used in orchard.
	4	No particulars given.	.. .. .	.. .. .	.. .. .
	5	Mixed	Sp. gr. of juice, 1·052	New red sandstone, clay.	Orchards folded with sheep and pigs.
	6	Sweet Alfred, Bitter Sweet, Sweet Pippin, Fair Maid of Devon, and Ponsford, mixed.	Trees blossom in May; fruit ripens in October. Trees are fair bearers and fairly hardy.	Heavy loam.	Orchards folded with sheep.
	7	Mixed	Fruit ripens in November	Red.	Orchards folded with sheep and pigs.
	8	St. Cyres (natural, mild, sour), Sweet Alfred, Low-leigh Bitter, Herring's Pippin (sour), and Slackmy-Girdle (sweet), one-third St. Cyres, others in	Trees blossom end of April, and fruit ripens in October and November. The trees are good bearers and of an average hardy nature. Apples, medium weight.	Part gravel subsoil, part clay.	Orchards folded with sheep consuming turnips and oil cake.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
154. Cider made in Hereford- shire.	23	Yellow Normans, Wilding, and Foxwhelp, in equal quantities.	Trees blossom in May; fruit ripens in Sep- tember and October. Trees are fairly good bearers, and, with the exception of the Foxwhelp, are of a hardy nature. The apples of the Yellow Norman are of a fair size, the others being small.	Clay.	Orchards not manured.
Casks con- taining less than 4 per cent. of alcohol.	24	Disqualified for late delivery into Yard.			
155. Bottles. Ditto.	25	Foxwhelp, Red Norman, and Princess Pippin, in equal quantities.	Trees blossom in May; fruit ripens in September and October. Red Normans and Princess Pippin are fair bearers, and the former is also of a hardy nature. Foxwhelp is a good bearer but not hardy. The apples of the Foxwhelp and Red Norman are small, and the Princess Pippin large.	Clay.	Ditto.
156. Cider made in Somerset.	26	Disqualified for late delivery into Yard.			
Casks con- taining not less than 4 per cent. of alcohol.	27	A fourth of Norton's Bitters, Gins, and Kingston Blacks, and one-eighth of Red Jerseys and Hornet.	Fruit ripens in October and November. The trees are good bearers with the exception of Kingston Black, which is a fair bearer. All are hardy. Sp. gr. of juice, 1.057.	Sandy loam.	Farmyard manure used in orchard.
	28	Equal quantities of Royal Jerseys, Corton Pippin, and White Close Pippin, one twentieth part Cap- tain Liberty, and a few mixed sorts.	Trees blossom in May and June; fruit ripens in November. The trees are good bearers and of a hardy nature, with the exception of Captain Liberty, which is a shy bearer and not hardy. Sp. gr. of juice, 1.048, 1.056, 1.058, 1.068.	Clay loam, with clay subsoil.	Ditto.

FARWELL on the Society's 1899 Exhibition of Cider.

30	Red Jersey, Chisel Jersey, few White Jerseys, Horners, and a few Cap of Liberty.	tion of Captain Liberty, which are sly. Royal Jerseys and Calburys are of a hardy nature. Sp. gr. of juices, 1.069, 1.070, 1.060, 1.057, 1.063. Trees are fairly good bearers and of a hardy nature.	Sandy loam, subsoil clay.	Orchard manured with farmyard manure, cow droppings, &c.
31	Silver Cup, Mill Apple, and Chisel Jerseys in equal quantities, viz., 3 bushels each to the hoghead.	Trees blossom in May and fruit ripens in November. Trees are good bearers and of a hardy nature. Weight of apples, 1 to 2 ozs.	Deep sandy loam.	Orchards manured with farmyard manure.
32	Chisel Jersey, Kingston Black, Horners, and Cap of Liberty. About 2 bags of Horners, Chisels, and Kingston Black, and 1 bag of Cap of Liberty for 1 hoghead.	Trees blossom in May, and fruit ripens in October; good bearers, except Kingston Blacks, and fairly hardy. Weight of apples, 2 oz. Sp. gr. of juices, 60.	Rich heavy land.	Usually have run of pigs in orchard, but this year have fed cattle with hay, putting it around each tree.
33	Equal quantities of Chisels and Dabinetts, Broad Leaves, and a few Cap of Liberty.	Trees blossom in May; fruit ripens in October. Broad Leaves and Cap of Liberty are fairly good bearers, others good. Weight of apples, 2½ oz. Sp. gr. of juices, 62.	Ditto.	Cattle running in orchard.
34	Equal quantities of Chisel Jerseys, Dabinetts, Kingston Black, and Cap of Liberty.	Trees blossom in May, and fruit ripens in October and November. Chisel Jerseys are very good bearers. Dabinetts good, others fair; all are of a hardy nature except Cap of Liberty.	Medium clay.	Farmyard manure used in orchards.

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
156. Cider made in Somerset. Casks con- taining not less than 4 per cent. of alcohol— continued.	35	One-fourth Royal Jerseys and French Jerseys; one- eighth Kingston Blacks and Old Cadburys, and one-fourth Gins.	Trees blossom in April and May, and fruit ripens in October. Royal Jerseys and French Jerseys are good bearers, and of a hardy nature; others are fair. Weight of apples, 1½ to 2½ oz. Sp. gr. of juice, 1·068, 1·061, 1·060, 1·055, 1·058.	Heavy clay on blue lias.	Cattle, sheep, and pigs run- ning in orchard and farm- yard manure used.
	36	Equal quantities of Jerseys and Kingston Blacks.	Trees blossom in May, and fruit ripens in November; good bearers and of a hardy nature. Sp. gr. of juice, 25.	Sandy loam.	Orchards not manured.
	37	Equal quantities of King- ston Black, Red Jersey, and Foxwhelps.	Fruit ripens in October. Trees are good bearers.	Clay.	
	38	One-fourth of Gins, Red Jerseys, and Norton's Bitters, and one-eighth Royal Jerseys and White Jerseys.	Fruit ripens in October and November. Trees are good bearers and of a hardy nature. Sp. gr. of juice, 1·066.	Sandy loam.	Farmyard manures used in orchard.
157. Bottles. Ditto.	39	Same as No. 27.			
	40	Mixed	Fruit ripens in November. Sp. gr. of juice, 1·060.	Clay loam, with clay subsoil.	Farmyard manure used in orchard.
	41	Equal quantities of Royal Jerseys, Chisel Jerseys, and Cadburys, a few Captain Liberty's, and Mixed Apples.	Trees blossom in May and June; fruit ripens in November. Royal Jerseys are good average bearers. Chisel Jerseys fair, Cadburys good, and Captain Liberty's shy. All except the latter are	Ditto.	Ditto.

45	Same as No. 35.	Trees blossom in May, and fruit ripens in November. Trees are good bearers and of a hardy nature. Sp. gr. of juice, .025.	Loam.	Farmyard manure used in orchards.
46	Equal quantities of Jerseys and Mixed Apples.			
47	Same as No. 37.			
48	Mixed	Sp. gr. of juice, 1.057	Clay loam, with clay subsoil.	Orchard stocked heavy with cattle in winter.
49	Same as No. 30.			
50	Masters, Jerseys, Royal Jerseys, and a mixture of Sour Pippins.	Trees blossom in May and June, and fruit ripens in October and November. Masters and Jerseys are exceptionally good bearers, and of a hardy nature. Royal Jerseys are average, and Sour Pippins uncertain bearers, but hardy. Average weight of apples, 2 to 4 oz. Sp. gr. of juice, 1.060, 1.050, 1.035.	Sandy loam.	Lime used on orchards, and farmyard manure on a portion.
51	One-eighth Red Jerseys, Doves, and Broadnose Pippins; two-eighths Horner, and three-eighths New Cadburya.	Trees blossom in May; fruit ripens in October. New Cadburya, Horners and Doves are good bearers, and of a hardy nature; others are fair. Average weight of apples, 14 to 3 oz. Sp. gr. of juice, 1.060, 1.057, 1.050, 1.051, 1.056.	Heavy clay on blue limestone.	Sheep, cattle, and pigs running in orchard, and farmyard manure used.
52	Mixed, mostly Jerseys ..	Trees blossom in May; fruit ripens in November; good bearers.	Clay.	Orchard not manured.
53	Equal quantities of Cadburya, White Jerseys, and Kingston Blacka.	Fruit ripens in October and November. Trees are good bearers.	Clay.	

158.

Casks containing less than 4 per cent. of alcohol.

APPENDIX B.—continued.

Class.	No.	Name of Fruit.	Information relative to Fruit.	Soil of Orchard.	General Information.
159. Cider made in Somerset.	54	Mixed	Sp. gr. of juice, 1·057	Clay loam with clay subsoil.	Orchards stocked heavy with cattle in winter.
Bottles containing less than 4 per cent. of alcohol.	55	Same as No. 30.			
	56	Same as No. 51.			
	57	Mixed Sweet	Trees blossom in May; fruit ripens in November. Trees are good bearers, and of a hardy nature. Sp. gr. of juice, 30.	Clay.	Orchards not manured.
	58	Equal quantities of Cadbury's, White Jerseys, and Kingston Blacks.	.. .. .	Clay.	
	59	Absent.			
160. Cider made in Counties other than Devon, Hereford, or Somerset.	60	Three parts Doctor Harvey, and one part London Pippin.	Trees blossom in May; fruit ripens in October. Dr. Harveys are good bearers and hardy. Londons hardy, but not very good bearers. Average weight of apple, Dr. Harvey, 2, London Pippin, 1·8. Sp. gr. of juice, 1·0180.	Strong clay.	Sheep folded in orchard.
Casks containing not less than 4 per cent. of alcohol.	61	Cowarne Red, Normans, and Kingston Blacks.	Trees blossom in May and are fairly good bearers of a hardy nature.	Heavy.	

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63	Equal quantities of Crow's Egg and King Pippins.	Trees blossom in May; fruit ripens in October. Crow's Egg are good bearers and King Pippin fairly good. Both are hardy. Weight of apples: Crow's Egg, 2·6; King Pippin, 1·3. Sp. gr. of juice, 1·0170.	Ditto.	Ditto.
64	Same as No. 61.			
65	Margils and Blenheims in equal quantities.	Trees blossom in May; fruit ripens in November. Fairly good bearers and of a hardy nature.	Loam on chalk.	Grass orchard fed with sheep.
66	No particulars given.	..	Loam.	Sheep manure used in orchard.
67	Ditto.	..		
68	Kingston Blacks.			
69	Royal Wilding.			
70	Same as No. 61.			

163.
Casks containing less than 4 per cent. of alcohol.

163.
Bottles.
Ditto.

The Note-Book.

Spaying of Cattle.—In the 'Journal' last year, page 254, attention was drawn to some experiments in France, which led us to the conclusion that under certain conditions spaying appears to have produced very beneficial results.

The subject has been attracting attention in England, and in August last Prof. F. Hobday, of the Royal Veterinary College, read a paper at a meeting of the National Veterinary Association at Plymouth, from which we take the following extracts.

The operation of oöphorectomy or ovariectomy (depending upon whether the ovaries are healthy or diseased) is commonly known as "spaying," and is still performed in some parts of the British Isles on calves and heifers. It has been applied at spasmodic intervals (especially during the present century) to dairy cows, but no statistics which have before been collected can compare with the recently published results obtained by the persevering efforts of M. Flocard, a veterinary surgeon, of Geneva.

This gentleman informed me in a letter received early in June last that up to May 31st, 1899, he had, during the past twenty-two years, performed the operation on no less than 5,079 animals. Amongst the first 2,000 there were about one-half per cent. of fatal accidents, and a further 5 per cent. of minor complications, such as abscess, peritonitis, and return of lymphomania. During the last 3,000 there have been no mortalities, and only 4 or 5 per cent. of secondary accidents of minor importance.

This brilliant result M. Flocard ascribes to the application of antiseptic precautions as far as is possible, and an improved instrument and method of operating.

In 1895 M. Flocard published an article upon the subject, and more recently read an article before the *Société Nationale d'Agriculture de France*, which appeared to conclusively prove the great utility and advantages of the operation.

These papers have attracted considerable attention amongst the agricultural and dairying communities in England and other countries, and have been frequently alluded to in the farming and stockbreeding papers.

At the latter end of October last a large dairy owner in Kent, Mr. Kirby, of Ashford, having several times read about M. Flocard's operations, induced that gentleman to come to England from Geneva and spay forty-two of his herd of milking cows. It was about a fortnight before this that I had operated upon my first case, and, being especially interested in the subject, I obtained permission from Mr. Kirby to visit his herd from time to time and personally watch the results. Since that time I have operated altogether upon fourteen cases.

The benefits claimed for the operation are:—

(1.) That animals which are being prepared for the butcher are fattened in a much shorter time without increase in the quantity or quality of the food.

(2.) That the flesh is much better in quality than that of the cow which has not been spayed (the flesh of the spayed cow even when old is said to be as palatable as that of the steer).

(3.) That the yield of actual meat is about 6 per cent. greater.

(4.) In milking cows the most noteworthy results are said to be shown upon the milk yield; the duration of lactation is prolonged for an average of from twenty to twenty-four months if the animal is operated upon about forty or forty-five days after calving, and the daily amount given averages almost as much as at the time of operation. The cow also fattens at the same time, so that when the milk yield falls to below a paying quantity the animal is quite ready for the butcher without any extra diet.

Of course, all cows will not give milk continuously for this period, some may lose their milk at the end of twelve months, whilst on the other hand M. Flocard can quote one instance in which a cow after being spayed milked continuously for seven years, another for six years, and several for five years.

That this prolonged period of lactation may occasionally occur even in a cow which had not been spayed is borne out by an animal at the present time in the possession of Mr. Garrett Taylor, of Trowse, Norwich. This cow, born in 1884, produced her first calf in 1887, and her third calf on the 11th of May, 1890. The circumstances attending the birth of this calf were such that it was deemed doubtful whether she would again breed, and the order was given to fatten her as soon as she was dry. In the Milk Record for 1898 (published March, 1899) the name of the cow is still present as having given, during the ninth year, a total of 3540½ lbs.

In spayed cows it is also claimed that the milk becomes richer in quality for cream and butter-making, and that the

absence of oestrus gives a greater aggregate amount at the end of the year, the supply being much more uniform and steady.

Having read such an advantageous account of the value of the spaying of dairy cows I wondered why the operation had not come into general practice amongst dairymen and others who did not wish to breed cows, but only to utilise them as temporary milk or meat producers; and in order to arrive at a conclusion it was necessary to refer to the literature upon the subject.

We need not follow Prof. Hobday in this examination prior to 1850. He says that up to 1850 the operation had always been done by the flank incision, and to this, together with the fact of the use of antiseptics not having been understood, must be attributed a great deal of the danger which existed of untoward consequences.

About this time, however, the matter attracted the keen interest of M. Charlier, veterinary surgeon of Rheims, who stated that, owing to apathy and the fact of its being left too much to individual experimentalists, the operation was not taken up to any great extent. He reports upon fourteen cases successfully operated upon from the flank. The conclusions he drew from these were:—

(1.) That the animal gave the same quantity of milk as at time of operation for at least fifteen months.

(2.) That the milk was richer in cream and of more agreeable flavour.

(3.) That there was a marked increase in flesh followed by fattening without change of diet, the value of the cows being raised from about one-fourth to even one-half more than before the operation.

To M. Charlier must be attributed the credit of introducing the vaginal method of operating, a method which gives infinitely greater safety than that of the flank. The idea came to him one day after accidentally lacerating the vagina of a cow whilst examining the animal to see if she was in calf, and he performed 200 operations without any mishap.

About the same time M. Morin, a Government veterinary surgeon, operated upon twenty-seven cows between the ages of six and fifteen years with very satisfactory results upon the milk supply, particularly in those cows which were from six to eight years of age.

In 1861, M. Gourdon, of the Toulouse School, speaks highly of the vaginal method of operating, and quotes one dairy where the average annual amount of milk, which was 1890 litres per cow before spaying had been practised, became 3,300 litres;

animals, when put to fattening, required less food, and the flesh resembled ox beef in quality.

In 1889, Dr. Ostertag reported nine months after operating, the results of twelve oöphorectomies which appear to have been very satisfactory up to that time, both as regards the supply of milk and the general condition of the animals.

On several occasions during the past few years papers on the subject have been introduced before the Central Veterinary Medical Society of Paris, one dealing with one hundred and seventeen, and another with more than fifty, successful oöphorectomies the ultimate results being favourably spoken of. In the paper presented by M. Flocard to the notice of the *Société Nationale d'Agriculture de France*, in January, 1898, this gentleman gave as the result of his experience:—

1. That in the year following the operation the animals, being kept under the same care and diet, produce an average 1,300 to 1,400 litres of milk more than if they had not been spayed.

2. That the richness of the milk is considerably increased, particularly in butter-making properties; and in addition its quantity remains constant, being no longer influenced by œstrum.

3. That the absence of the troubles attending parturition and pregnancy is an advantage to the town dairyman.

4. That the spayed cow fattens more quickly, the flesh being better in quality than that of the normal animal. The net weight of meat, too, is about 5 to 6 per cent. higher in spayed than in those which have been allowed to become pregnant in order to fatten them.

In the discussion which followed, several well-known veterinary surgeons and agriculturists spoke highly of the results which they had observed after the operation.

As regards the best time of operating, Prof. Hobday says: Cows are operated upon when a few months old, and heifers when it is finally decided that they are to be fattened instead of passing into the dairy herd. The ovaries are removed through the flank.

In milking cows, in order to get the full benefit of the prolonged lactation, the operation should be done when the animals are about five, six, or seven years old, and at about four or six weeks after calving, this being generally acknowledged to be the time when a cow gives her maximum quantity. They are operated upon through the vagina. Neither in heifers nor cows should the operation be performed at time of œstrum.

Having described the methods of operation and the principal accidents which occasionally happened, Prof. Hobday states that

as a rule the animals commence to eat at once after the operation, the only signs of irritation being that the tail is elevated for a few hours. It is astonishing how very little pain is expressed during and after the operation. The flow of milk may fall off, although this is by no means a necessary sequel, for about three days, when it usually returns to the normal amount.

Summarising the fifty-six consecutive cases operated upon in England since October, 1898, Prof. Hobday says: Of the forty-two animals operated upon by M. Flôcard, one showed on the following day a little hurried respiration and colic, but after the application of mustard to the abdominal wall this soon passed off. None of the others seemed at all disturbed. In the fourteen cases upon which I have operated, one five year old cow died about fifty-six hours afterwards of internal hæmorrhage, but the veterinary surgeon who made the post-mortem could not positively trace it to the ovarian arteries, although I fear this must have been the origin.

With this exception, the general remarks of the owners have been that a few hours afterwards one could not tell that anything had been done to the animals.

Sufficient time has not yet elapsed to speak definitely of the prolongation of lactation, but, so far as we can tell, up to now the results are encouraging.

With regard to the putting on of flesh, there is a most decided improvement, and all the animals that were done with this object have become fit for the butcher in a much shorter time than those which have not been spayed. With those still milking, the improvement in condition is also very noticeable. Mr. Kirby's opinion, after nine months' careful observation, is that "they have certainly kept their average up better than usual, and fattened much quicker than they do as a rule. I consider that this is due to the operation."

Prof. Hobday concludes his paper thus: From the excellent results obtained by M. Flôcard, and from those of the fourteen instances in which I have myself operated, I am inclined to think, as far as one can judge from nine months' experience, very favourably of the operation under certain circumstances. Had not the one death already alluded to occurred, I should have been very much more impressed with its value.

For dairymen in towns, those who buy the cows after having just calved and do not calve them down again, it is certainly likely to be of great value, even if the period of lactation is only prolonged to a steady, continuous flow of say eighteen months. It must also be of service for the more rapid fattening of cows that have aborted and are likely to do so again if put to the bull, for nymphomaniacs, for barren animals, those that

have had milk fever and are thought to be predisposed to it, for cows too old to breed from, and for those affected with any disease (such as tuberculosis) in which the milk is unsafe but the meat perfectly fit for food.

Clearly, too, it seems a much better method of quieting the animal for fattening purposes than the one so commonly adopted of allowing pregnancy to take place. This would explain why there is a nett gain of actual meat in the spayed cow, as the whole of the nutritive material assimilated goes to form flesh instead of a considerable portion of it being required by the growing fetus. In the calf and young heifer it is generally acknowledged that they become quieter and that fattening takes place much more rapidly.

We have heard that since writing the above, Prof. Hobday has been continuing his experiments, and "that no accident or untoward symptom has again occurred."

The Destruction of Charlock.—Some experiments made in 1898 on the effect of spraying charlock with a solution of sulphate of copper were noticed in the 'Journal' of last year, page 243. Probably no subject has excited so much attention in 1899 as this one, and numerous and varied experiments have been made in different parts of the country. The reports of these experiments are almost unanimously in support of the contention that by spraying at the proper time, with a solution of sulphate of copper of the proper strength, charlock may be more or less destroyed or checked in its growth, with considerable advantage to the crop in which it is growing. The only crop which suffers permanently from the sulphate of copper solution is the turnip crop, hence charlock cannot be destroyed by spraying when growing in turnips.

The results of the experiments which were made in 1899 have been summarised by Dr. Voelcker (in the Journal of the Royal Agricultural Society) and by others. Among these is one which has been compiled from answers to a circular issued by Mr. G. F. Strawson. This summary is as follows:—

OPERATIONS.

The operation of spraying was carried out from the last week in April to the end of June. The busiest time was the last two weeks in May and the first two weeks in June. The date of the best time for spraying cannot be fixed, it necessarily varies with the locality and season, but the safest guide apparently is the age of the charlock; for it is clearly shown that the most

successful spraying was on young charlock from two to six inches high.

The weather at the time of spraying was generally fine. In some cases, where rain fell immediately after, it lessened the effect. Rain falling the first or even the second day after spraying appears to make some difference in the results, whilst windy weather is objectionable, as it makes it impossible to spray evenly.

The relative proportions of the different crops sprayed were:—Oats, 55 per cent.; barley, 39 per cent.; wheat, 6 per cent.

Of the age of the charlock referred to in this report, the following is an approximate estimate:—50 per cent. may be described as young, 40 per cent. as advanced, and 10 per cent. as old.

On the 40 per cent. described as advanced, the effect was not so good as on the 50 per cent. described as young, whilst on the 10 per cent. described as old, probably not more than one-half was destroyed.

The materials employed were copper sulphate and iron sulphate. Copper sulphate was much more largely employed, and by comparison with the iron sulphate gave better and safer results.

Solutions of copper sulphate varying in strength from 1½ per cent. to 4 per cent. were used, and iron sulphate solutions varying from 5 per cent. to 15 per cent. The quantities applied per acre varied with the size of the crops and ranged from 15 gallons to over 100 gallons per acre.

In the majority of successful cases, 40 to 55 gallons of 2 per cent. solution of pure copper sulphate were used per acre. The best results were obtained with 50 gallons 2 per cent. copper solution.

The weaker and higher strengths of solution were proportionately less successful than the medium strengths.

It must be understood that pure copper sulphate is necessary. Some very disappointing cases of failure are reported from using impure sulphate.

RESULTS.

The results of the above operations are very conclusive.

To the question, "Do you consider that any permanent injury was done to the crops?" the answer was "No" in every case, and it was remarked in many instances that the crops were much improved.

In reply to the question, "Do you consider the spraying successful, or only partially so?" the replies were "Successful"

68 per cent. of the cases; "Partially so" in 26 per cent.; and "No" in 6 per cent.

In the 26 per cent. partially successful cases, the estimated destruction of charlock varied from 40 per cent. to 90 per cent. fair average would be about 66 per cent.

Out of 6 per cent. non-successful cases, distinct causes of failure could be traced in 4 per cent., but the reports disclosed no reason for failure of the remaining 2 per cent. Possibly the plant was wild radish or other similar plant less susceptible to the dressing.

The question as to the effect of spraying upon young seeds and clover in corn, and upon beans and tares, was not asked in this inquiry, but many of my correspondents have been good enough to confirm by their experience what is now generally admitted, that the spraying is not injurious to these plants.

There are plants in some districts very much like charlock known locally as "Wild radish," "Smooth charlock," &c., that are less affected by the spraying, and fuller information is needed as to the distribution of such plants.

CONCLUSIONS.

This report has been impartially compiled from the returns sent in, and from them the following conclusions may be drawn:—

- (a) That charlock can be destroyed in growing corn crops without injury to the latter, by spraying with 50 gallons of a 2 per cent. solution of pure sulphate of copper per acre.
- (b) That the best time to apply this is when the charlock is young and from two to six inches in height.
- (c) That when the charlock is destroyed the corn crops are improved.

That the principal causes of failure are:—

- (d) Spraying too late.
- (e) Using insufficient solution.
- (f) Using impure copper sulphate.

To those who intend to spray their crops in the future it may be pointed out that it is most desirable to decide early upon the acreage to be sprayed, and make every preparation in good time in order to secure the greatest advantage from what is proved to be a beneficial discovery.

The Uses of Separated Milk.—Professor Carroll, Agricultural Superintendent to the National Education Board of Ireland, in an address at Cork, on the uses of separated milk, said:—Milk may be considered an ideal food. It has all the elements in combination that serve to build up the body of the growing animal or to make good the waste of the mature. The mineral matters in milk serve to build up the frame of the animal. Its albuminoids contribute to the production of muscle in the young, and to repair the waste in the mature. The fat and other carbonaceous materials of milk serve to form fat, to keep up the heat of the body, and, under certain circumstances, to assist or take the place of the albuminoid matters in the formation and repair of the tissues of the body. The fat in milk is an important element in its value as food, and a deprivation of milk of its fat reduces its food value. While we may introduce into skimmed milk other fatty matter, it must be conceded that no other fats can take the place of butter-fat in milk, and this important fact should have full influence with those who are responsible for the rearing of young animals, whether human or bovine.

Fat is removed from milk in the separation of its cream.

During many ages we were satisfied with the application of the ordinary physical laws to cream separation; but the mechanical cream-separator is now an institution in dairy farming, and the system of cream separation by machinery is very general.

It would appear that improvement in dairy practice seemed to culminate in depriving milk of its fats almost thoroughly; the percentage of 0.1 of fat left in separated milk counts for very little in reckoning its value as food. In the developments for the better extraction of the fat from milk, the future of the separated milk appeared to be completely ignored, and developments came so rapidly that it seemed as though complete cream separation was to be the end of all dairying. Yet separated milk had to be dealt with. It could not be considered a waste product of the dairy. When the fever of excitement consequent upon the rapid evolution of the separator had abated, a time came when separated milk had to be considered. What is it fit for? Oh, only for pigs, and poor enough for them, was the opinion generally held. Yet scientific men said separated milk has all the elements of food excepting fat. But the practical man shook his head. Mix some fatty matter such as linseed with your separated milk for calves, said Science. The practical man tried the prescription, and again shook his head. There was something wrong. Science came to the rescue.

ou have gone too fast, it said. You have made your milk more liable to injury from natural influences between the time of separation and its being fed to animals. The great unseen and comparatively unknown organisms have to be reckoned with. Use your milk immediately after separation or bring it to a condition in which these organisms cannot harm it, said science. And so freshly separated milk and pasteurising and sterilising methods came into use.

The effect of sterilisation is said to be the destruction of all spores that milk may contain of bacteria that are injurious to human health. It is, however, imperative to state that no system of pasteurisation or sterilisation will compensate for neglect of sanitary or hygienic conditions in the dairy and its surroundings.

As food for human use separated milk has not a wide range. With the exception of a few towns in England, in which it is sold to persons in large factories, there is but a small demand for separated milk for family use. In Ireland, especially, the use of separated milk is much restricted. Probably one of the causes for this small demand is the almost complete absence of knowledge of dietetics, and the lamentable deficiency of knowledge of economical cookery by our people.

The use of separated milk upon the farm in Ireland resolves itself into systems of calf rearing and pig feeding. Unfortunately, the methods adopted are neither scientifically sound nor practically as profitable as they might be under more enlightened and careful management.

The feeding of calves upon separated milk should be done upon well-considered lines. The outcry against the use of separated milk takes its origin from the results of improper methods. Extensive inquiry has satisfied me that where intelligently employed separated milk may be profitably used in calf rearing. The farmer, with his hand separator, who is a thoughtful, careful manager, can show as profitable a lot of calves as can the man who has followed the old-time system of dairying and calf-rearing. I advisedly say profitable, because I consider that in the great calf-rearing district of Ireland there is considerable loss through first getting up a lot of calf flesh, and then by subsequent mismanagement allowing this flesh to be lost.

The results of some experiments recorded from America between feeding whole milk, skim milk, and skim milk mixed with linseed meal porridge to young calves, indicate whole milk to be superior in nutritive effect, although the gain on it was more expensive, pound for pound, than that on skim milk. There appeared to be no advantage from adding the linseed

meal porridge. The experiment has considerable practical value, indicating as it does the importance, as calf food, of separated milk, even though it has a fat value as low as 0.1 per cent. Evidence of this high value is abundantly available.

In my opinion the value of separated milk as food for calves is almost entirely vitiated by the improper way in which it is fed, and not through any inherent bad qualities. Shortly stated, separated milk should be given to calves—(1) commencing with small quantities mixed with whole milk; (2) given fresh from the separator; (3) if circumstances oblige its being kept some time before use it should be properly pasteurised; (4) oatmeal, maize meal, or linseed meal should be used in conjunction; (5) the utmost care should be taken in order to save separated milk from all taint. The greatest attention to cleanliness should be given through all processes under which it is taken. I repeat, the most thorough system of pasteurisation will not remedy the evils of uncleanness in the dairy.

It is in the feeding of pigs that separated milk has its widest sphere. There can be little doubt that on the farm swine can be made the most amenable animals for the consumption of this product. Whether in the rearing of young pigs, or the fattening of older, milk of all conditions has considerable value. Important experiments upon the feeding of pigs with separated milk have taken place in America, Denmark, and in the United Kingdom, at the Munster Agricultural and Dairy School in 1893, where experiments on this subject were very carefully conducted by Mr. Smyth. The experiments upon pig feeding which were carried out in Denmark were of a most elaborate character. Mr. Richard Beamish was kind enough to translate from the Danish the report upon the experiments, and thus a valuable addition to English agricultural literature was secured. The Bacon Curers' Association of Munster circulated widely copies of this report. In this report the value of separated milk as food for pigs was stated to be such that six pounds of separated milk or twelve pounds of separated milk whey were as pork producers equal to one pound of barley.

I have frequently urged the desirability of experiments to test the value of separated milk, and preparations made from it, in the feeding of poultry. I am perfectly convinced that in the feeding of poultry separated milk will find its most profitable employment. Skim milk is especially valuable as a food for young chickens during hot dry weather, and becomes of less importance as the chickens grow older and the weather becomes cooler. As poultry rearing and management have

now been vigorously taken up at the Dairy School, we may expect some interesting experiments on poultry feeding from his institution.

Milk as a drink for cows has not yet been tested as a profitable method for its disposal in Ireland. In that land of ingenious devices, where originality appears to have its home (the United States), several experiments in this direction have been carried out. I have seen general reports upon the trials as to the value of separated milk as a drink for cows, which indicate considerable increase in the milk yielded by cows so fed.

The question of obtaining a product from separated milk that will have the qualities of portability and freedom from decomposition during a fairly long period has exercised the minds of scientific and practical men for some considerable time past. Desiccated or dried milk has been introduced in different forms. Milk cakes were manufactured in America, but were not successful through their liability to decomposition. This difficulty would not exist to the same extent in desiccated separated milk, but the question arises, will the dried matter of separated milk pay for its desiccation? I am inclined to think that a dried food from separated milk will some day find its place amongst foods for farm animals, and that the quality of compound cakes, now so generally used, would be materially improved through the introduction of the dry matter of separated milk. As a beverage separated milk has not had a fair trial. A comparatively large quantity of milk is now consumed by the public. Whole milk is generally sold for this purpose. Separated milk has not, so far as I can ascertain, been put upon the market in an attractive form. It appears to me that the sale of separated milk as a beverage for the public might be cultivated with pecuniary profit, and, at the same time, give benefits to the public. In the catering for comestibles for the general public, the absolute necessity for care and completeness in the methods of marketing is now fully recognised. The sale of separated milk pasteurised and offered in attractive bottles, at a fair price, ought to succeed. The aëration of milk for a beverage has been frequently tried, but without apparent success. The liability of the milk to rapid change makes it difficult to discover methods that will preserve it for any considerable time.

Temperatures for Forcing.—In the “Fruit Growers’ Annual” for the year 1899 the subjoined list of temperatures for forcing various fruits and vegetables appears. Forcing should be started at a low temperature and this gradually

increased. Growth under such conditions is more natural and robust.

Asparagus.—For night 55°, or day 60° to 65°. Possibility will be found the best.

Carrot.—At night from 40° to 45°, by day 55° to 60°.

Chicory.—Temperature from 55° to 60° will be found suitable.

Melon.—At night from 65° to 70°. By day 80° to 85°.

Peach.—Start with a temperature of 40°, rise gradually to 45° at night. For daytime, increase heat gradually up to 70°, the highest when sun heat is experienced.

Nectarine.—Commence with 40°, and rise slowly to 60° at night. For day, increase to 60° or 70° in sun-heat.

Cherry.—Start with 45° for night, 60° for daytime. When fruit has set and stoned, gradually rise to 70° and 75° at night and 60° at night.

Apricot.—Start at 40°, raise to 45°. When in bloom maintain a temperature of 55°, as nearly as possible. When fruit has set and stoned, raise to 70° by day, and 60° by night in sun-heat to 80°.

Sea Kale.—Start at 42° and rise gradually to 55°.

Tomato.—Heat from 60° to 65° or 70° is most efficient. At night 55° to 60° is ample, and 55° possibly best.

Rhubarb.—A temperature of 55° at night, and 65° by day answers well.

Cauliflower.—Heat of 55° at night, and from 60° to 70° by day is ample.

Cucumber.—At night the temperature should range from 60° to 70°, by day 75° to 80°. In sun-heat it will rise naturally.

Endive.—Heat from 40° to 45° at night, and from 55° to 60° by day.

French Bean.—A minimum heat of 60°, and from 75° to 80° by sun-heat is best.

Lettuce.—By night the temperature should be from 55° to 60°, by day 55° to 60°.

Green Mint.—The heat is best from 55° to 65°.

Mushroom.—Let the temperature be from 60° to 65° to appear, then 60°, and not less than 55°.

Mustard and Cress.—Ensure heat from 55° to 70°.

Onion.—The temperature should be from 55° to 65°.

Potato.—The best heat ranges from 50° to 60°.

Radish.—By night the heat ranges from 45° to 50°, by day 55° to 60°.

Strawberry.—Start with a temperature of 45°, raise to 60° when flower-buds open. After fruit sets, raise the heat to 75° in sun-heat.

Vine.—Start from 45° to 50°, slowly increase till they are in flower to 75° and 80°. Fruits set best at 75° to 85°; when colouring, 72° to 85° is best, and when ripening the same.

Stalk Disease and Root Rot in Potatoes.—The following information relating to the stalk disease, "*Peziza postuma*," and to the root-rot fungus, which are associated with the appearance of the "yellow" blight of potato plants, has been published by the Congested District Board for Ireland, from information supplied by Professor T. Johnson, D.Sc., of the Department of Science and Art, who has recently made an inquiry into the matter.

Potato growers, especially in the west of Ireland, have no doubt in many cases noticed the potato leaves gradually turning yellow long before it is the normal time for the plants to die down. Thus some varieties which should last to the end of September, have their leaves yellow or quite gone at the end of July. This early "yellowing" is a sign of disease.

Plants with such leaves do not give their full yield of potato tubers. On the underground parts of such plants, on the roots, on the branches of the stem (rhizome), and on the tubers, fine, brown, branching threads can be seen, especially with a magnifying glass. These threads are part of a fungus which attacks the potato plant underground, both inside and outside, and prevents the roots from doing their work—that of taking up from the soil the water and mineral matter needed by the plant. These fungus threads also attack the roots of all kinds of weeds in the potato plot, and in this way are more easily able to creep from a diseased potato plant through the soil to attack the roots of a healthy plant, and so to spread the disease through the crop. As the roots of the attacked plants die, little black swellings or spots—sclerotia—the size of a pin-head, may be seen in them and on their exposed surface. These swellings serve to keep the fungus alive from year to year. This same potato plant with the yellow leaves and the root fungus just described, will often be found suffering also from the "stalk" disease in which the stem, either just above the ground or through a large part of it, is seen to be no longer green, but white, dry, and hollow. In the hollow part, and often on the surface, will be found many swellings, white at first, afterwards becoming black, more or less rounded, and varying in size from a pea to a pin-head. At this stage of the "stalk" disease the decay of the stem causes it to topple over, and a badly affected plot will at times appear as if the plants had been trodden down. No nutriment can then pass up or down through the decayed stem, and the leaves and portion of the stem above

the decayed part, though it may be for some time still green, is quite useless to the plant.

If the bed in which such plants are growing be examined, the decaying leaves lying on the ground will often be found to have similar large swellings on them. They also often have little greyish-white tufts of easily detached "spores" or "conidia" on them. In both cases the decaying leaf helps to spread the disease. Whether the black swellings occur on the underground parts of the plants—the roots and tubers ("potatoes"), or on the stem (rhizome), or above the ground, in or on the stem and leaves—they enable the disease to live on from year to year, and to infect the following year's crop. The black swellings are not dead, as some have thought, nor a sign that the disease itself is at an end. Potato plants suffering from the stalk disease have, in all cases examined, been found to suffer also from the root-rot fungus.

One of the most serious features in connection with the spreading of the yellow blight and the difficulty of stamping it out is the fact that both the root fungus and the stalk fungus attack, as above stated, the many different kinds of weeds in potato-beds, which are often left along the edge of the bed during winter.

Remedial and preventive measures recommended:—

(1.) When the signs of disease above mentioned are first noticed, and from time to time afterwards while they continue to appear, the grower is advised to go through the plants with a sharp knife and cut out and remove every portion of the potato tops the stems of which have been affected as described above. The stem should be cut through immediately below the decayed portion, care being taken to avoid, as far as possible, injury to the healthy parts of the plants. Care should be taken as far as possible to prevent the black swellings falling on the ground.

(2.) All weeds growing through the crop should be pulled up with their roots, removed and burned.

(3.) Potatoes should not be planted in land in which diseased potatoes were grown the previous year. The greater the interval between two successive crops of potatoes in such land the better; and potatoes grown in land which was affected by the diseases in question should not be used as seed, but if this cannot be avoided it is recommended that these tubers should be steeped in a half per cent. solution of copper sulphate before they are pitted. Such a solution may be made by dissolving eight ounces of copper sulphate in ten gallons of water; the potatoes should be steeped for about an hour in the solution and afterwards thoroughly air dried before pitting.

(4.) Care should be taken to burn all weeds, potato-stalks, roots and decaying foliage which remain in the ground after the potato crop has been removed; on no account should the stubs be covered with potato-stalks, nor should the stalks be used for litter. To leave the diseased tops, roots, weeds, or lack swellings on the ground is to leave that which reproduces the disease next season, and is very much the same as allowing weeds to run to seed, and the seed to stay in the ground.

(5.) The seed potatoes, especially when used cut should not be planted in direct contact with fresh seaweed or fresh dung. Both seaweed and dung should be well rotted before use.

Fresh seaweed should not be used. Some few months before the seaweed is to be applied to the land it should be made into a manure heap by alternating it in layers a foot thick with similar layers of soil. The whole can at the end of that time be used like well-rotted manure. The healthier the conditions under which the potato plants are grown the less liable will they be to disease.

(6.) Lime, potash, and phosphates are three foods highly necessary for the full development of the potato plant, so that, especially in peaty land, a heavy dressing with lime, *e.g.* in the form of "coral sand," will be an advantage.

(7.) The more thoroughly the ground is drained and aerated the less likely are the potato plants to be attacked.

Deep trenching of the ground should be carried out where possible. Wet, sour, peaty lands are largely responsible for the ravages of yellow blight.

Tuberculosis and Milk.—The prevention of tuberculosis in man, commonly known as consumption, is a subject of continual interest to the medical profession. Having failed hitherto to obtain any certain remedy, medical men have recently been paying more attention to the prevention of causes. Unfortunately the subject suddenly became popular, with the inevitable result that people who possessed neither the training nor the knowledge to qualify them to do so began to express opinions about it. Foremost among these were men who, knowing that cows were liable to tuberculosis, jumped to the conclusion that milk was one of the primary sources of consumption.

Tuberculosis is a disease caused by a definite micro-organism, bacillus, discovered by Koch. This bacillus is only found in the diseased portion of the animal where it produces nodules, as for example, and indeed most frequently, in the lungs. When these nodules break up the matter which they form contains the bacillus, as for example the sputum of a consumptive patient. In other words, the bacilli are located in

special organs, and are not found in the general tissue or system of the animal. If, therefore, a cow be suffering from tubercle of the lung the milk of such cow will not on that account contain the tubercle bacillus. For the milk of the cow to be contaminated with the bacillus it would be necessary for the tubercle to be also in the udder or milk vessel of the animal. But the number of cows which suffer from tubercle of the udder is very small, and this was well known to both the veterinary profession and dairy farmers. Hence the statement by medical men that milk was one of the chief sources of consumption in human beings, was not received with much credit by dairy farmers. The subject, however, was one too serious to be neglected, or even discussed on the basis of the information at the disposal of either side. The British Dairy Farmers' Association, therefore, took the initiative, and in the winter of 1898 instituted a series of investigations, which were undertaken by Professor Axe.

The Report of the results of this inquiry is contained in the Journal of the Association, vol. xiv. pp. 245-277. The objects of the experiments were to take a number of herds of various breeds and to determine, by means of the tuberculin test, how many animals in each herd were affected with tuberculosis. Nine herds were tested, and the following table is given showing the number of cows in each herd and the percentage which reacted.

Herd.	No.	Reaction per cent.
1	94	43·4
2	83	3·6
3	74	71·4
4	60	76·9
5	48	30·3
6	41	0·0
7	36	90·9
8	20	20·0
9	17	0·0

The conditions of housing and management are described, and, commenting on these facts and figures, Professor Axe says:—

“From a consideration of the foregoing statement it will be seen how strikingly the influence of shed-life on the propagation of tuberculosis is brought out, and, conversely, how an exclusively out-door existence and judicious management is capable of assuring absolute freedom from the disease.

“The total of reactions (90·9 per cent.) which appear in herd 7

der circumstances of constant confinement is but the expression of a pernicious system of treatment which is manifested in all the rest in proportion as it is practised. In other words, the prevalence of tuberculosis in dairy herds is and by this inquiry to be greater in proportion to the amount of confinement they undergo, while its entire absence is seen to be a conspicuous feature of a more natural existence. These results are precisely in accord with common experience of the mode in which the disease is spread, and present for consideration a problem of the first importance in regard to measures of prevention, and suppression of the disease. That an exclusively shut-door existence of milch stock is not inconsistent with successful dairy farming is beyond dispute, but how far conditions would be found to favour the adoption of such a system as a general practice it is impossible to say. Climate and soil in some districts would offer a serious obstacle to winter stocking of pasture land, but there still remains the alternative of open yards to fall back upon, which, while affording more protection, would in some measure meet that other and more universal objection—the extra requirement of food and the diminished supply of milk incidental to exposure of cow stock to a low temperature. There is a wide-spread opinion among those who have practised the system of close housing that the loss upon the yield of milk in the practice resorted to would be prohibitive. Those, however, who adopt the open-air management aver that ‘the shortage of milk is compensated by the much greater cleanliness of the milk, the plumpness of the cows, and the less expense and trouble in looking after them.’

“To what extent the milk supply of cows bred and reared, and maintained under more natural conditions, would be influenced by a low temperature I am unable to say, but that it would be considerably less marked than in those which after being habitually housed are subjected to temporary exposure, might reasonably be expected. I have no doubt that a return to the more natural system of management indicated above would, if supplemented by the judicious employment of tuberculin and isolation of the sick, materially aid in the suppression of bovine tuberculosis.”

Of the 461 cows concerned in the inquiry, fifty-one or 11 per cent. were found to have some disease of the milk-gland of one kind or another, and of the number so affected twenty-seven or 5.2 per cent. reacted to the tuberculin test. The milk from the diseased udders of seventeen cows was used for inoculation experiments. “From the diseased udders of these animals a quantity of milk was removed, and, while still fresh, 40 minims

from each cow respectively were injected beneath the skin of two guinea-pigs.

"The milk remaining from each sample, varying from half an ounce to two ounces, was mixed with the food of the inoculated pigs.

"Eight weeks after inoculation twenty-four of them were destroyed under the influence of chloroform, and the rest were killed by the same means during the tenth week. A careful post-mortem examination was made of each animal immediately after death, with the following result:—Of the thirty-four inoculated, thirty-two were found to be healthy; one had an abscess in the liver about the size of a pea, and the other had several minute or milliary abscesses in the same organ.

"Parts of the diseased glands were microscopically examined by Sir George Brown, C.B., and found to be free from the organisms of tuberculosis.

"This branch of the inquiry gives prominence to two important facts, viz., the large amount of disease affecting the udders of dairy cattle, and the remarkable freedom of tuberculous cows from udder complications." The milk from the animals suffering from tuberculosis, and from those cows having any disease of the udder, were submitted to Mr. F. J. Lloyd for chemical and bacteriological examination. By him thirty-nine samples were submitted to careful microscopical examination, and the tubercle bacillus was not found in a single sample.

Professor Axe, commenting upon the results of this inquiry, says: "When these results are considered side by side with the alleged relation of tuberculous milk to infant mortality, one is disposed to ask if the time has not arrived when this question should be re-considered, and if the zeal of health reformers has not outrun their experience and judgment." While these investigations were in progress others were being made under the auspices of the Cheshire County Council. A full Report on these experiments has now been published, from which it appears that in two herds numbering seventy-one animals, the number of animals affected with tuberculosis was seventeen.

A bacteriological examination of the milk from reacting cows was made by Professor Delépine, of Owen's College, Manchester, and only in one instance could the tubercle bacilli be found.

This Report contains much valuable information which need not be detailed here. Our object is to point the lesson which is put forth in this Report as one of the principal conclusions to which the inquiry leads: "That the number of animals affected with tuberculosis is not so great as has been stated, and the

centage of those so affected giving tuberculous milk is also so high as is generally put forth."

While these results show that the medical profession appear to have over-estimated the liability of milk to cause consumption, they none the less show that tubercular disease in cattle is far too prevalent, and that farmers should take every means in their power both to get rid of tuberculous animals and to prevent those which are now sound from contracting this disease.

White Scour in Calves.—Under the auspices of the trustees entrusted with the administration of the "Limerick Endowment for Technical Education," some interesting experiments were carried out in the Co. Limerick last year with the object of throwing some light on the cause of the great mortality among calves in the South of Ireland. The conduct of the experiments was entrusted to Mr. Wade, F.H.S., who has just presented his Report on the results. The first step taken was to issue to nearly 200 farmers an exhaustive list of queries. Answers were received from about fifty, and a careful analysis of these showed :—

1. That the disease is very prevalent ; attacks primarily the calves' digestion ; is highly infectious, and often persists year after year on the same farm.

2. It is both more common and more serious on large farms ; on good land ; with better bred cattle ; in closed houses.

3. These facts suggested preventive measures.

The Trustees accordingly determined to direct their experiment to the following special points, viz. :—

- 1st. Feeding of the cows.

- 2nd. Feeding and management of the calves.

- 3rd. Cleanliness and disinfection of the buildings.

A farm was found where disease was rampant—nine out of thirteen calves having died—and where the farmer was willing to co-operate in the proposed experiment. Ten of the cows that remained to calve were divided into two lots of five each, to be treated as follows :—

Lot A.—The cows were to be fed in the ordinary way ; but on their calves being born the latter were to be put into a clean house, each calf to be fed separately *four times* a day, and after three weeks to have a little separated milk and barley meal boiled with the new milk.

Lot B.—The cows were to be fed for nearly a month, before calving, on 10 lbs. of bran and meal mixed, and given in the form of a "mash" morning and evening. Each calf was to be fed three times a day for a fortnight. All the ten

cows were in fair condition, and the calves when born were strong. The two lots of calves occupied different parts of the same large house, so that ventilation and surroundings were the same.

The results of the experiment were as follows:—

There died of—

		Percentage.
Lot A	0	0
Lot B	2	40
Of 14 treated in the ordinary way	9	64

An opportunity for testing the effect of disinfecting the buildings occurred in a wooden shed in which the calves were dying very rapidly. There were ten calves, and on April 24th the house was thoroughly disinfected, floor, roof, and walls, with carbolic acid mixed with water (1 pint of the first to 8 of the latter). The calves had been fed twice a day; this was changed to three times, and the calves were fed separately. On May 11th the shed was again disinfected, as it was considered the first dressing had done much good. All the ten calves lived except one, which was very delicate at the time of the first disinfection.

SUMMARY.

These experiments, though, of course, on too limited a scale to be taken as conclusive, establish a strong presumption for both—

- (a) Careful and frequent feeding of the calves,
 - (b) Constant attention to cleanliness
- being effective preventive measures.

In the feeding experiments, of those treated in the ordinary way, 64 per cent. died, but none of these were fed carefully four times a day. The better feeding of the cows seems to have had but little effect. The disinfecting experiment (which it will be noted was accompanied with more frequent and careful feeding) also achieved remarkable if not conclusive success, as the disease, which was raging before the disinfection, almost completely disappeared after the treatment.

Straw for Stock Feeding.—“Agricola,” writing recently to the ‘Field,’ said straw is possessed of more nutritive property than is commonly supposed. Because its substance is hard and coarse, and has often been found indigestible when stock are compelled to eat raw straw, it is perhaps only natural for the substance to be despised as a food product, but it must be very evident to any experienced farmer, who looks beyond the mere surface of things, that there cannot but be a great deal

nutriment in straw. For instance, in the days of our grandfathers, it was very customary to turn in-calf cows into straw yards, and give them nothing else but straw and the cavings of barn-door refuse until they dropped their calves in February or March. Moreover, such cows, fed entirely on straw, appeared to sustain condition tolerably well. The eagerness, likewise, with which flocks of sheep, driven past heaps of straw left by thrashing-machines, bury their heads therein in search of the softer tops, which contained the berries, must have made it very evident to any attentive observer that straw is palatable to stock, as well as to a certain extent nutritious.

The reason why straw is not more generally utilised for food instead of for littering horses and cattle is because of the hard, coarse nature of the lower portions of the stalks, and especially where the knots come. But means may be taken to soften these parts, and indeed the entire bulk if straw intended for foddering be chaffed. There are several ways of improving it, such as steaming, boiling, fermenting, and steeping, which I will consider in turn. Steaming chaff is well known to impart delicious flavour, or, rather, to bring this out of the material, so that cattle, sheep, and horses alike show a great preference for steamed straw chaff over the unsteamed. The process also softens the texture of the chaff, making it more digestible. So satisfied have many farmers been of the utility of steaming that they have provided little chambers to be filled with cut straw, into which the waste steam from the engine fixed at the home-ead might be turned. Others, unpossessed of this agency, have purchased a portable boiler with receptacle for straw or pots attached to carry out the object, while the more impetuous have been known to invest a few pence in a disused sugar cask or some other bulky wooden receptacle of the kind, which, having ginlet holes in its bottom, could be placed over an ordinary furnace, that it might be filled with straw chaff tightly pressed down, after which the water in the furnace could be made to boil until the chaff had been thoroughly steamed.

Boiling has usually been practised when it has been desirable to mix other food substances with cut straw, and water added to form a mess of cooked food for stock. Bean straw is almost as hard as sticks would be, but boiling would soften the topped stalks to a pulp, and the expense and labour would be amply repaid, bean straw being in reality the most nutritious of all straw, and placed by some chemists very nearly on an equality with meadow hay. Mangold, turnip, and carrot tops have often been boiled up with bean and pea straw, together with small potatoes and any other refuse substances deemed to be made more palatable by boiling.

Scotch and North of England farmers have been more accustomed to adopt the boiling system in the preparation of foods than their South of England brethren. They are fond of steeps for horses and cattle alike, and especially for dairy cows. They do not always go to the expense of boiling them, however, soaking straw chaff, with other mixtures intended for a ration, about eight or ten hours previous to use, being considered a sufficient means of making the ration a digestible as well as a good one. A still less troublesome method of improving straw after chaffing is that of damping and allowing it to ferment in heaps, when the like nice flavour would be developed by the fermentation which takes place when straw chaff is steamed, the knots of the straw being also, together with the other parts, much softened. Of course, root pulp may be intermixed with the dampened straw previous to the fermentation, by which both substances would be partially cooked, and their respective flavours intermingled. Farmers have often eked out a short supply of roots by this means, adding to the chaff just the quantity of pulp which they can spare.

Straw intended for stock fodder should certainly be subjected to one or other of the methods above described before utilisation, even if the avoidance of indigestion be alone considered. Horses and cattle alike have not unfrequently been lost through more dry chaff having been devoured than their organs of digestion and assimilation could cope with.

Willow and Osier Culture.—It is, I fear, says Mr. T. Willsan, in the 'Agricultural Economist,' not generally recognised that there is money to be made out of the culture of willows for furnishing osiers for basket-making. There is a large and growing demand for the latter, and our manufacturers are unable to obtain all the material they want in this country, hence a vast quantity has to be imported yearly from Germany. I understand that the value of wicker goods made in this country last year amounted to no less than 1,000,000*l.* sterling. Now this shows that our British landowners have overlooked the importance of willow growing as a profitable industry, and allowed the foreigner to step in and take money out of the country, which might have been retained at home.

There is plenty of land in this country that might be profitably utilised for willow culture. Damp and swampy soils, utterly unsuitable for any other crop, might be planted with the common osier willow (*Salix viminalis*). In three years, from the time of planting, the shoots are ready to be cut as osiers and turned into money.

To make osier growing a success, the land must be trenched

and well manured a year before planting. During the winter the surface should be frequently scarified to keep down weeds and to get the land in good heart.

The plants should be put in a foot apart, in rows four feet apart. If plants are not easily obtainable, procure cuttings of shoots eighteen inches long, heel these in moist sand in a trench and plant them out in May. The cuttings, when planted, should only have about three inches of their upper end exposed above ground, and they are best placed in a vertical position.

The purple osier willow (*Salix purpurea*) will succeed on any soil. Moisture is not so essential for this as for the common willow. Odd corners may well be planted with this and the space be turned to profitable account. Plant as usual for the previous species. In both cases weeds must be allowed to grow for the first year or so; afterwards the willows will take care of themselves.

The shoots must not be cut until they have been planted two years. Shoots of one year's growth are in demand for basket making; those two years old for forming the chief ribs of long baskets; while those three or more years old are in demand for forming hoops for kegs, &c.

The shoots require to be cut in spring, when the sap is on the move. After cutting they should be placed in a vertical position in a tank or deep pool of water until the bark becomes soft.

Basket makers do not go to this trouble; they place the shoots in troughs and steam them until the bark is loosened. When the latter object is accomplished, the shoots are drawn through iron spikes. This strips off the bark and they are then put into bundles of 50 lbs. weight.

The average price of peeled osiers is about 4d. to 5d. per lb. An acre of willows planted as above advised will yield about 100 lbs. of dried and peeled osiers; so that the returns per acre would be from 37l. 10s. to 41l. 13s. 4d. I know of one instance where a friend made 34l. per acre the third year after planting. Then the yearly return has been about 26l. After the third year the cost of cultivation is practically nil, consequently the only deduction to be made is for rent, and labour of cutting, drying, &c. Even after these disbursements are made there would be a liberal balance as profit. Seeing that the land would otherwise be useless, the experiment of willow growing is well worth embarking in.

Agricultural Education.—During the latter part of 1899 a select committee of members of Parliament met together to consider what steps should be taken to further promote Agricultural Education. After

this meeting Mr. Henry Hobhouse, M.P., wrote a letter to the 'Times,' which immediately attracted considerable attention, and showed a desire on the part of many to help forward the objects in view. The result was the formation of an Agricultural Education Committee, which, although self-constituted, has already obtained sufficient recognition to be received as a deputation by the Duke of Devonshire, the Lord President of the Council. In introducing the deputation the Right Hon. Sir W. Hart Dyke, who is chairman of the Committee, said "what they complained of was that education as applied in purely rural districts was not precisely of the type that could be desired." He then, in conjunction with other speakers, impressed upon the Lord President the views of the Committee. In his reply the Duke said, "if they (the Committee) could succeed—and he hoped they might—in arousing an active interest in this subject, he did not think there would be any great difficulty in introducing such changes in the educational system as those they desired to see carried out."

We therefore think it desirable to make better known the views of this Agricultural Education Committee which have been formulated in the following resolutions. We may not all agree with these views, but if we do we should help to make them known, so that they may be adopted, while if we do not, it is equally our duty to try to ascertain, and bring before the Committee, better methods of promoting what all are anxious to see, namely, adequate education given in rural districts.

The resolutions are as follows:—

Reorganisation.—(1.) That, in view of the importance of concentrating the control of agricultural and rural education in the hands of one Government Department, it is expedient that all the educational work of the Board of Agriculture should be transferred to the new Board of Education.

(2.) That the staff of the new Board should include an adequate number of inspectors, well acquainted with the needs of the agricultural classes and the conditions of country life.

(3.) That the Board's inspectors should be instructed to see that the curricula of rural schools are differentiated from those of urban schools.

Curricula of Elementary Schools.—(4.) That in the rural elementary schools there should be a continuous course of rural instruction, commencing in the lower standards with object lessons, such as those recommended at present, and continued throughout the upper standards with lessons in natural history and elementary science bearing on agriculture and rural life. These lessons should be illustrated by experiments and accompanied (wherever practicable) by practical work on plots of

round attached to the schools. Time should be found for these lessons by somewhat diminishing the present requirements for class subjects, especially in grammar, spelling and higher arithmetic. A syllabus should be drawn up for each course, but should be open to modification by the teacher, according to local requirements. A list of suitable reading books bearing on country life should be prepared for the information of the country teacher. The drawing in rural schools should bear some relation to the practical requirements of country life, and, as far as possible, lead up to the construction of objects in wood where facilities for such manual work are available.

(5.) That grants adequate to remunerate the teachers must be given for these rural courses—a “block” grant being preferable. Wherever practical instruction is given, grants should be made on a higher scale, or a fixed grant should be offered higher in amount than the total of the grants now earned by the majority of rural schools. The introduction of such rural courses should be facilitated by some aid from the Board of Education towards the initial expenses in providing the necessary plant, or arrangements might be made for allowing pupils in elementary schools to use the plant and apparatus of the County Councils when not required for County Council classes.

(6.) That the special difficulties of small schools should be allowed for, and they should be encouraged to group themselves under peripatetic instructors, who might be supplied, by arrangement with county authorities, to all schools undertaking the new curriculum.

Training.—(7.) That provision should at once be made at certain of the Teachers’ Training Colleges for giving those students who desire it practical as well as theoretical instruction in subjects bearing on agriculture and horticulture. This might best be done at colleges situate in small towns or country districts, or in the neighbourhood of County Council or other farms managed for educational purposes. Provision should be made by County Councils or other local authorities for the theoretical instruction of teachers and pupil-teachers, in the subjects bearing on agriculture and horticulture, by means of central classes and for courses of practical instruction at any institution where such instruction is given. For the latter purpose scholarships should be offered by the County Councils, some of such scholarships being confined to rural pupil-teachers. The Board of Education should enter into communication with the various local or other authorities with the view of securing general and systematic action in these directions.

(8.) That, to induce teachers to qualify themselves, notice

should be given in next year's Code that after a certain date rural schools will be required to supply courses of rural instruction as a condition of receiving the highest scale of grants. Whether a school was "rural" or not might, in case of doubt, be decided by H.M.'s Chief Inspector for the district.

(9.) That a special rural teachers' certificate should be awarded to those teachers who have gone through a full course of instruction, practical and scientific, in agricultural subjects.

Higher Agricultural Instruction.—(10.) That the Board of Education should encourage those county authorities, who have not yet done so, to provide, or to contribute to, school and experimental farms, and should inspect and report annually on such farms. These school farms might be of different types suitable especially (a) for the labourers, (b) for the farmers. Each farm should be developed by its managers on lines most suitable to the agriculturists of the district. But the operations and courses of instruction should be freely criticised and compared by the Board's inspector, who should from time to time meet and confer with the managers. These school farms might be linked by means of scholarships, (a) in the case of the labourers, with the primary schools of the districts, (b) in the case of the farmers, with some university or university college providing an efficient agricultural department.

(11.) That no more certificates for proficiency in the "principles of agriculture" should be granted to persons who have not completed an adequate course of practical instruction.

(12.) That the courses for "schools of science" situate in country districts should be differentiated from those of urban schools of science by substituting instruction in agricultural science and experimental agriculture for that in other subjects.

Evening Continuation Schools.—(13.) That in rural evening schools instruction should be given in such subjects as natural history, botany, and other sciences bearing on agriculture, horticulture, bee and poultry keeping, land measuring, farm accounts, &c., rather than in such subjects as typewriting, commercial arithmetic, and shorthand. The teaching (especially in science and horticulture) should be illustrated by experiments, and manual instruction in woodwork, metal work (combined in each case with drawing), or basket work should, if possible, be included in the course. Cottage gardens should be provided in connection with evening schools.

(14.) That poultry-keeping, bee-keeping, manual instruction, and cottage gardening be included among the subjects mentioned in the Evening School Code, on which both fixed and variable grants are paid. Or (preferably) that a "block" grant be given to every efficient evening school supplying instruction

any (say three) of the scheduled subjects which are suitable for the class of pupils in the school. That the 17s. 6d. limitation should be made to apply to evening schools.

(15.) That, to ensure a general supply of evening schools, it should be made part of the duty of every County Organisation (outside London and the county boroughs) recognised under clause VII. of the Directory to organise such schools throughout their county, to receive and supplement the grants made by the Board of Education, and to supply and pay qualified teachers. In many cases villages would have to be grouped and peripatetic teachers employed.

(16.) That, during the winter months, continuation schools should be allowed to be held (when more convenient) in the day time.

Instruction of Girls.—(17.) That girls in rural elementary schools should be given a course of instruction corresponding to the rural course recommended for boys, but with the substitution of simple lessons in cookery, domestic economy and hygiene for practical work in the workshop or on the land. Where necessary, rural schools should be encouraged to group themselves for cookery lessons under peripatetic teachers and be allowed to use the stoves and utensils provided by the County Council. More advanced instruction in these subjects, together with cutting-out and (where practicable) laundry work, horticulture, bee and poultry keeping, should be given in day and evening continuation schools. In secondary "schools of science" such subjects and dairying should be recognised in lieu of advanced science teaching and practical work in the laboratory.

The Robson Act.—(18.) That a fair trial should be given to the system of agricultural education suggested by Mr. Robson's Act, bye-laws being framed to suit the local requirements of each district. Wherever the staff admits of it, children coming within the agricultural provisions of the Act should be taught in a separate department and given instruction bearing on their agricultural work.

Co-operation with Agricultural Societies.—(19.) That, with a view to interest agricultural societies in the work of agricultural education, they should be supplied with leaflets, reports, &c., to distribute among their members, who should be invited to visit agricultural schools and experimental plots in their neighbourhood and to discuss them at their meetings. The County Education Authorities might also invite them to co-operate in carrying out experiments, *e.g.* in manuring, milk-testing and the feeding of stock, and in organising classes in agricultural subjects.

The Farmer's Library.

NOTES AND REVIEWS OF NEW BOOKS.

- 1.—*A Farmer's Year*. Being his commonplace book for 1898.
By H. RIDER HAGGARD. London: Longmans, Green and Co. 7s. 6d.

NOT only have we all our prejudices, but these have their periods; certainly one of the most general prejudices at the present day is a dislike to disjointed books such as diaries or notes, observations made day by day, or teaching by question and answer, or even conversational dialogues in the style which Walter Savage Landor made famous. Hence we took up this book with a strong bias or prejudice against the style. Turning over its pages, we were struck with the great beauty of the illustrations which, though representing subjects such as may be seen on many a farm, we had not learnt to look upon as being quite so artistic as here represented. "The illustrations alone are worth the cost of the book," said a friend, and we were not unwilling to agree with this statement.

Then we began to desire information upon some of the subjects illustrated, and were led to commence reading here and there. Once started, there was no difficulty in going on. We have many times since taken up this book to ascertain the author's views upon some special subject which was attracting our attention, and we have gone on reading, fascinated by the matter and style, long after our primary object had been attained.

And what numerous subjects are treated herein. Let us take one or two examples. They will serve not only to illustrate the diversity of material, but also the characteristic manner in which each is treated by the author. On the subject of the agricultural labourer, the author says:—

"Let us take the problem of life as it presents itself to that *rara avis*, the stay-at-home agricultural labourer of to-day. He has received some education—for, supposing him to be a man on the right side of forty, the Board

schools had begun in his time—but he does not trouble himself much about learning. As soon as he was out of school he began work on a farm in his parish, and at nineteen or twenty, following a natural and proper impulse, he took to himself a wife. From that day, earlier than is the case with any other class of society, his responsibilities began. Being still so young, he would not be trusted in any of the higher positions on a farm, such as that of horseman, but his work would be that of a general labourer earning, let us say, an average wage of about thirteen shillings a week, including his harvest. Within five years he would have at least three children, perhaps more, and within twelve years seven or eight living, all of whom must be supported by the daily labour of his hands, and who in nine cases out of ten are so supported. Besides providing for these children he pays the rent of his cottage, 3*l.* or 4*l.* a year, and, if he is a prudent man, a subscription towards an Oddfellows' or other benefit Society, which makes him an allowance on the rare occasions when he falls sick or is disabled by accident. It is during these first seventeen or eighteen years of his married life that the burden of existence falls most heavily upon him, since there are many mouths to feed and only one pair of hands to provide the food. Still, in the vast majority of instances it is provided."

Then comes a break in the narrative and a dissertation upon benefit societies, old age pensions, and what not, occupying five pages, when once more Mr. Rider Haggard pulls himself together, and, remembering his subject, says:—

"To return to our labourer. Most people unacquainted with the routine of a farm have a notion that his duties are of the simplest description. To these I would say, Let them try any one of them, even the easiest, such as 'drawing' a ditch, and I think they will change their views. In truth there is no single operation on the land that does not require a very considerable amount of skill to perform it properly, and this skill, acquired by years of practice, the agricultural labourer puts at the service of any one who will pay him 13*s.* a week. Moreover, there is no nonsense about eight hours a day with him. With brief intervals for food, he labours from six to six or more, and in winter from daylight to dark."

Here we venture to think Mr. Rider Haggard has hit the mark, probably without knowing it, of one great attraction

which town life seems to have for the farm labourer—the eight hours day. No one seems to point out to him the amount of work crowded into that eight hours. We venture to think that if it could be gauged it would be found to exceed the work done on the farm in twelve hours by an average labourer. Towards the end of the year in December we find this same subject, the agricultural labourer, again in the author's mind. Discussing the problem of the profitable growth of corn, with all its entanglements, we come upon this brief but incisive expression of opinion on the problem of the day.

“Lastly, to come to the root out of which all this controversy grew—how about the labourers who live upon the land? Are they, or are they not, to receive a decent wage? At present their pay is inadequate, and therefore they are leaving the land, neither, as I believe, to their own ultimate benefit, nor to the good of our country. Is this to go on or is it not to go on? And, if not, how is it to be prevented without the aid of measures which will restore the soil to its prosperity? That is the problem to which wiser men than I am must find an answer, and within the next generation.”

For a discussion of some of the remedies which have been suggested, we must refer the reader to the work itself.

From the condition of the labourer to the education of his children is not far for the mind to travel. Yet it was not until May that some occurrence brought the subject to Mr. Haggard's mind. Then we find him expressing those views which have gradually yet firmly impressed themselves on the minds of educational reformers, as may be seen from many recent speeches, more especially those by members of the Agricultural Education Committee. Mr. Haggard says:—

“In the opinion of many of us benighted farmers and squires, the plan under which the young are taught in rural districts is wrong fundamentally, being indeed a plan devised by dwellers in cities for the advantage and use of cities. What we seek is a system whereby boys and girls will be instructed in those arts and things which are likely to be serviceable to tillers of the soil and their helpmeets. We desire and ask for a course of education intended to make the pursuit of agriculture payable and attractive to those who are born to follow it, in the place of teaching which, either with or without design, does in effect turn their thoughts and feet from the country to the town.”

That seventeen pages of index are required to merely record the subjects which have come before the eyes and mind of the author will convey some idea of the diversity of the contents of his volume. The most remarkable fact, however, is that in the reading of these commonplace notes one's interest never flags. Apart from the many practical lessons which this book inculcates—if indirectly, yet none the less forcibly—its intrinsic interest is alone sufficient to justify our recommending all who are interested in agriculture to read it.

2.—*Dairy Chemistry*.—By H. DROOP RICHMOND. London : Charles Griffin and Co. 16s.

THE book has for its sub-title a more complete description of its purpose, viz., to be "a practical handbook for dairy chemists and others having control of dairies." It is the most complete treatise in the English language on the subjects of which it deals, and indicates an amount of study and compilation seldom met with in the works of English writers, but reminding one of the best German authors. And yet it is not complete, for, strange to say, the 'Journal' of this Society is not even mentioned among the periodicals which are considered useful, and it is evident that the stores of information on dairy matters which this 'Journal' contains are unknown to the author. Thus the researches of Lloyd on Cheddar Cheese-making during the last eight years have not been utilised; indeed, appear to have been overlooked. But a book of this description is the result only of many years' work, and it is therefore somewhat excusable if the most recent investigations have not received in this first edition their due share of attention.

In spite of that the book is one which will appeal not only to those for whom it was written—the analytical chemists who are engaged in dairy work—but to many others.

Especially would we recommend it to those who are engaged in dairy teaching. The introductory chapter, in those parts where it enters into the chemistry of the constituents of milk, will probably be beyond them. But even here much will be found to add fresh interest to the study of that simple yet complex substance milk.

The analysis of milk forms the subject of Chapter II., which leads up to a consideration of what is normal milk in Chapter III. This opens with the statement that the average

percentage composition of milk may be taken to be as follows:—water, 87·10; fat, 3·90; milk-sugar, 4·75; casein, 3·00; albumin, 0·40; ash, 0·75. Probably taking the milk of a cow yielded both morning and evening, from commencement to end of lactation, this composition would be a high average. The milk supplied to the Society's Cheese School from April 1st to the end of October, over a period of seven years, showed total solids 12·64 per cent., containing 3·65 of fat. The cows would possibly remain in milk for two months longer, yielding increasingly rich milk, but the quantity would be small. Even this average does not give us the true composition of the milk, for it does not take into account the much greater volume given in the spring, when the milk is comparatively poor, than in the autumn, when the milk is comparatively rich. This question of what is the normal composition of milk has at the present moment a special interest, being the subject of enquiry by a Departmental Committee of the Board of Agriculture.

Chapter IV., which deals with the chemical control of the dairy, will be of special interest to those engaged in or supplying milk to dairy factories.

The remainder of the volume deals mainly with the consideration of butter and cheese, their composition, methods for their analysis, and for the detection of adulteration.

Such is a very brief outline of the contents of this work. The subjects, though in many cases very technical, are treated in a plain straightforward manner in ordinary English, with as little use of technical language as possible, indeed, far less than would have been quite justifiable. This renders the work available to very many who would otherwise have found it too tedious, and we can confidently recommend it to all interested in dairy chemistry.

3.—*Bacteria; especially as they are related to the Economy of Nature, to Industrial Processes, and to the Public Health.* By GEORGE NEWMAN, M.D., &c. London: John Murray. 6s.

THE appearance every year of some work on Bacteriology shows not only the rapid strides which this comparatively new science is making, but also that it is exciting an interest outside the growing circle of those who are engaged in its pursuit. This is not to be wondered at. Confined at first almost entirely to subjects relating to the diseases of man or animals, and therefore largely pursued by medical or veterinary investigators, its

results were hidden in scientific literature. But the researches of Pasteur proved that bacteria were playing an important part in some industrial processes, and with the further development of the science it became evident that these infinitely minute plants were not only worthy of, but demanded, continued study. It was in 1898 that the publication by the Oxford University Press of a translation of some Lectures on Bacteria, given by the celebrated German botanist, De Bary, first made the majority of English readers acquainted with what was then known concerning these organisms. Since then great strides of progress have been made, and several works written.

"The present volume," says the author, "is an attempt to set forth a popular scientific statement of our present knowledge of bacteria. Popular science is a somewhat dangerous quantity with which to deal. On the one hand it may become too popular, on the other too technical. It is difficult to escape the Scylla and Charybdis in such a voyage."

We think the author has succeeded beyond expectation, and that the book will prove of very great interest to all those who desire to know the more practical bearings of this new science.

It may be well to point out briefly, while following the contents of this book, a few of the more especially agricultural aspects of its subject-matter.

The necessity of pure water for both drinking purposes and use in the home and dairy is well known to all our readers. In the past, when there has been any doubt about the purity of the water supply, it has been customary to send a sample to an analyst for chemical investigation. The analyst will have little difficulty in determining whether a water is undoubtedly pure or undoubtedly polluted. But unfortunately there are many samples which are doubtful, and here it is that a bacteriological analysis proves of the utmost value. Pure water contains very few bacteria; sewage and all substances which would pollute water contain an enormous number of bacteria. Hence, if water be contaminated with sewage, the number of bacteria present rises above what may be considered a standard. The author reviews what has been done with respect to the study of bacteria in water, and states that he, "after some experience of water examination, would favour a standard of under 100 bacteria per cubic centimetre of water." In his opinion, and it is one which is every day gaining ground, both a chemical analysis and a bacteriological analysis are necessary to determine the purity of a water supply.

Having described the more important disease-producing bacteria found in water, the author considers the question of the purification of water, both on a small scale in the home, and on

a large scale for public supply, and then the purification of sewage, more especially by the modern system of bacterial agents, is described.

In the fourth chapter the relation of bacteria to fermentation is considered. How alcohol is produced from sugar, by those organisms which are termed yeasts, and this alcohol again converted into acetic acid (vinegar) by yet other organisms, is fully described, and, like the rest of the book, well illustrated.

Then we pass to the consideration of bacteria in the soil. This study, one of the most recent developments of bacteriological investigation, is likely to be far-reaching in its importance. For the soil seems to be a substance peculiarly favourable to the retention of the vitality of microbes. Thus the author says: "Miguel has recently demonstrated that soil bacteria or their spores can remain alive in hermetically sealed tubes for as long a time as sixteen years." In this chapter we have a very full description, with many admirable illustrations, of the nitrogen-fixing organisms which are found in root nodules, as also of those organisms which cause the nitrogen of all nitrogenous manures applied to the soil to be gradually converted into nitric acid, and so rendered available as plant food.

Bacteria in milk, in milk products, and in other foods are subsequently considered, while the last three chapters are devoted to the bacteria of disease and to questions which arise out of their study.

Such is a very brief and imperfect description of the contents of this work, but it is difficult to give any adequate idea of them in a short notice. What most strikes a bacteriologist is the absence of technicalities without sacrifice of accuracy, the wide extent of ground covered, yet withal the thoroughness of the work and its peculiarly up-to-date character, even the recent epidemic of typhoid fever at Bristol not being overlooked. The book reflects great credit on the author, and it cannot fail to increase the reputation of King's College, London, where he holds the important post of Demonstrator of Bacteriology.

4.—*Chemistry for Agricultural Students.* By T. S. DYMOND.
London: Edward Arnold. 2s. 6d.

THE object of education is to train the faculties. What faculties, and how many are there? we can imagine the ordinary teacher asking. To some, perchance, the only natural faculty

they have found in boys is a faculty for mischief. Had they ever analysed that faculty they would be surprised how greatly curiosity entered into it, and a little further consideration would show that this curiosity was excited by objects near them and surrounding them, and was non-existent as regards objects not seen. Nature, if we would but study her and strive to comprehend her, tells us daily how to educate a child. But no. We have formed our own opinions of what education is and nothing will shake it. Ask a hundred schoolmasters, and probably ninety-nine will tell you that the object of education is to train the memory. If it be true, as medical men say, that the first symptom of insanity is to be under the sway of one fixed notion, then truly our educational system would appear to be in a sorry plight. The fixed notion of teachers is to train the memory. Tennyson's Northern Farmer might have truly said:—

"Dost thou 'ear the taächer's voice, as he jabbers awaäy,
Memory, memory, memory—that's what I 'ears 'im saäy,
Memory, memory, memory—man, thou's an ass for thy paäins,
Theer's more sense i' one o' the lads nor in all thy braäins."

If it were true that this one faculty alone needed training, then we could find no fault in educating a boy to be a merchant by means of Greek, a farmer by the history of the Normans, or a sailor by the study of botanical terms. But we venture to think that memory is not the only faculty; we will even go still further and say that for the majority of men it is not even the most important faculty, for success in every vocation of life is more dependent on the power of observation than on any other faculty which man possesses.

These thoughts have been prompted by a paragraph in the preface to this work, in which the author says, "A farmer does not need to be a chemist; at the same time he needs the training in accuracy, careful observation, and experimental method which a study of chemistry *properly carried out* affords."

The italics are ours, but the whole gist of the sentence lies in these three words. In many instances "science" is taught in schools merely as a means of training the memory. It is no longer science, it is history, when once it is deprived of that utility which comes from the handling of everything by the pupils themselves. Unless it be practical it is useless.

This book is practical. It describes a course of elementary chemistry, "designed to enable an agricultural student to acquire the knowledge and training he needs by a short experimental study of the chemical substances with which

agriculture is concerned, his attention being directed at the same time to the practical application to rural industry of each subject dealt with."

5.—*Sheep Raising and Shepherding: a Handbook of Sheep Farming.* By WALTER J. MALDEN. London: L. Upcott Gill. 3s. 6d.

MR. MALDEN possesses the rare combination of being both a sound practical farmer and a facile writer. As a sheep breeder and among sheep breeders he has had very varied experience, and he tells what he has seen and thought clearly, and in a way which will appeal to his fellow-farmers.

The sheep has been termed the farmer's "sheet anchor," and "still remains and is likely to remain," in the author's opinion, "the key to successful farming over the greater part of the country."

The book claims to be a record of personal experience "gained among the sheep, and by intercourse with those who have done so much to improve the more notable breeds."

The result of this experience has convinced the author that "every breed and every district possesses distinct features requiring different methods of treatment," and one might therefore expect that he would describe each breed and its treatment separately. But this is not the system which has been adopted. To commence with, a description is given of the breeds of sheep, with notes on the making and selection of breeds and on cross-breeding.

Those points which should be looked for in sheep are next discussed, "as badly-bred sheep are rarely profitable, or, at any rate, are not so profitable as those better bred." The supply of green and concentrated food, upon which so much depends, having been considered, four chapters are devoted to the management of ewes, lambs, tegs and wethers, followed by a description of the management of a show flock. The work is illustrated with some excellent and characteristic plates.

Mr. Malden recognises the fact that success in sheep farming is not to be acquired in a moment, and that it demands a far deeper knowledge than a mere acquaintance with sheep. In his opinion, "a good sheep farmer is generally a good all-round farmer, for no class of farm stock requires closer attention or more skilful management than sheep. Moreover, he must be a skilled tiller of the land, as the ability to secure suitable crops at all seasons proves he has his arable land well under

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ontrol." But even this is not sufficient. Profit in farming, as in many other pursuits, mainly depends on knowing not only what to buy and how to manage it, but also to buy and when to sell. "The time to buy is when there is fair chance of profit, and not when there is little likelihood of gain." This dictum would appear to be so self-evident as to need illustration. But the author gives a striking example of how it is at times overlooked. Speaking of the purchase of sheep in the autumn in seasons of great shortness of kees he says: "Many thousands of sheep are bought in, in the autumn such years, and the buyers know there is practically no chance of profit; yet, because it is the custom of the district to buy at that season they do it year after year. In no other business would such a course be followed."

It is not often that we come across a book which instructs the reader what to do, and also what to avoid. I believe that farmers interested in sheep will read this book with profit.

6.—*Plant Diseases caused by Cryptogamic Parasites.* By GEORGE MASSEE, F.L.S. London: Duckworth and Co.

THE aim of this book is to enable those directly occupied in the cultivation of plants, who have but a limited period of time available for study, to determine the nature of diseases caused by parasites of a vegetable nature; to apply in the most appropriate manner those curative and preventive methods which experience has shown to be most successful in combating the particular form of disease under consideration; and finally to include in the daily routine of work precautionary measures which, without being costly, frequently prevent a slight disease from assuming the proportions of an epidemic.

The contents are not divided into chapters, but may be said to consist of three parts. Only the first two are of interest to farmers, the third being purely scientific and suited solely to the students of cryptogamic botany.

The first portion, which occupies fifty pages, we may designate as introductory. It deals with subjects more or less common to all the diseases of plants, and contains some practical advice.

As showing how diseases may be spread, even by syringing, the author, referring to plants grown under glass, says: "This means spores are dispersed over every part of a house. Syringing is simply tempting Providence in those instan-

where the house contains plants of one kind only, and where the presence of a disease is known or even suspected." As regards the possibility of the water used for syringing being the carrier of disease germs, the author says: "This can be obviated by adding a wineglassful of paraffin to three gallons of water. This proportion is sufficient to destroy germinating spores, and will not injure, but in reality benefit, the plants in other ways."

As indicating how diseases of plants are propagated, we read that "the seed of diseased plants often produces diseased seedlings," and based on this fact the author considers that "seedsmen should be required to give a guarantee that seed offered for sale was obtained from healthy plants." It is appalling to think what damage would be done by these plant diseases were it not that "many parasitic fungi can only live on one particular host plant, and the majority are confined in their ravages to closely related plants." But this is not the only check on their diffusion. "Most people have observed that even in the worst cases of a disease certain plants remained unscathed, and in certain instances it has been proved that the descendants of these plants also possess—we had almost written inherited—this immunity."

The author here states facts which have not, in our opinion, had the attention they deserve bestowed upon them. The inability of a fungus to grow upon more than one variety of plant or one species cannot be due to any structural peculiarity of such plant or species. Hence, it must depend upon the chemical composition of the juice or sap or tissue. Presumably on one plant this favours the growth of the fungus, and in another is prejudicial thereto. We are even inclined to believe that ordinarily the natural composition of the juice of plants is always prejudicial to the growth of fungi, and that the latter can only attack plants which have from some unknown cause produced an abnormal juice or sap. Investigation along this line is needed, and would, we believe, yield much valuable information.

The second section, which is the main and most valuable part of this work, consists of a description of the principal diseases of plants. As these diseases are headed by their popular names, there appears to be no order or system in the arrangement, and one is puzzled at first to understand why the potato disease is followed by the grape mildew, and the onion mildew by that of the cucumber. The reason, however, is simple. The order depends upon the scientific classification of the diseases; but this scientific aspect is then made secondary to the more practical consideration of making the popular name

f each disease as prominent as possible. It is this characteristic which will make the book really valuable to the practical man. The principal diseases are illustrated, and, what is more, the illustrations are of quite exceptional excellence. The value of a work of this description must necessarily depend mainly on the illustrations. The gardener or farmer is not as a rule so trained as to be able to recognise a particular fungus from a written description, however carefully such description may be worded. But frequently he can recognise it by means of an illustration. Even then it is very desirable that each illustration should be of life size, or at any rate that the actual size should be stated. This we miss in the book. We would also recommend the author in a future edition to describe the use of a strong magnifier, such as a gardener or farmer can carry about with him. Illustrations of microscopic structure have their value, but it is essentially limited to the student or specialist. Very few men, even if they possess a microscope, would know how to prepare material for examination, so as to compare it with the illustrations. Of course these things should be taught in rural districts, but they are not, and until the science master has become an institution in rural districts, farmers will seldom have any one to help them in such matters.

Under these circumstances, how far can a book like the present one be utilised by the ordinary gardener or farmer? Such is the test by which alone it can be valued, and we are pleased to state that it stands the test. When a fungoid disease is first noticed, we may safely assume that nothing is known about it except the name of the plant on which it was growing. The author gives in an index a list of plants subject to disease with the pages on which each plant is mentioned. Thus, a farmer finding a disease on an apple-tree would have simply to turn to the index of Host plants for the word apple, and then examine one by one the various diseases described until he found that which corresponded with his specimen. He would then learn the cause, the cure, and the means of preventing the spread of this disease, and the cost of the book would probably be manifoldly repaid on the first occasion on which he had to consult it.

7.—*A Text-Book of Agricultural Zoology.* By F. V. THEOBALD.
London: William Blackwood and Sons.

IN the preface to this work the author describes *Agricultural Zoology* as that science which treats of the life-histories, the habits and the peculiarities of all the animals which affect for good or for evil our stock and crops, whether on the farm or in the garden. He might also have stated that there is another aspect of this study, which he has not overlooked in the work, namely, the prevention of those evils which arise from animals that are injurious.

The author states "it is hoped that the book may be of service to the farmer; but it is primarily written for the rapidly increasing class of students in our *Agricultural Colleges*, &c. In their hands lie the future of scientific agriculture, in the development of which economic zoology must play not perhaps the least part."

Zoology is one of the most interesting of studies, and the objects with which it deals are ever easily obtained. Unfortunately most men have been accustomed to look at any living object which is met with as something worthy merely of a moment's wonder, and then to be destroyed. We wish that the teachers who are destined to live and work in rural districts could be induced to go through a course of study such as would enable them to appreciate a work like this one of Mr. Theobald's. Few of them perhaps realise how much more interest they would find in their village, and its neighbourhood, how much greater would be the hold they would have on their pupils. We trust that many a rural schoolmaster will obtain and study this book. To farmers it appeals directly, being a treatise on a subject of which they cannot afford to be ignorant. But, undoubtedly, the author is right in his opinion that it is mainly suited for students. Zoology is a subject which cannot be treated without the use of special language, of terms which are technical and not generally understood. But it cannot be said that the author uses more of these terms than are necessary, indeed, in those places where the author is writing mainly for farmers, there is considerable freedom from scientific language. At the same time we think it would have added to the value of the book if it had contained a glossary of scientific terms, with their meanings very briefly stated, and giving the number of the page where any more detailed description could be found.

The book contains no less than 225 illustrations, most of which are admirable, and greatly augment the value of this interesting and instructive text-book.

—*The Agricultural Surveyor and Estate Agents Handbook.*
By TOM BRIGHT. London: Crosby Lockwood and Son. 7s. 6d.

His little work, which may be carried with ease in the pocket, contains in its 400 pages a vast amount of information such as land agent or surveyor constantly needs. Though largely composed of tabular matter, it is by no means entirely devoted to mere figures. Some portions of the work, such as the chapter dealing with farm-houses and cottages, roofs, cow-sheds and other farm buildings, are well illustrated with plans. Equally well illustrated are the sections dealing with fences and gates.

There are few branches of farming which do not at times require either a knowledge of or reference to statistics. Statistical information is especially useful when such subjects as the drainage of land, its cultivation and manuring, and the feeding of cattle are under consideration. The author gives the prices of materials, labour and implements, under each subject treated.

A special section is devoted to the "cost of producing farm crops," and this includes some elaborate tables showing the net cost, on heavy, medium and light land, of raising crops of wheat, barley, oats, roots, clover, &c.

The work commences with those numerous data which are needed by surveyors, then proceeds to consider the data relating to farming, and finally deals with subjects, such as "the valuation of property," "fixtures and dilapidations," and others which are of special interest to land agents. In addition to the subject-matter being well classified, there is a good index, so that any information required can be easily found. We consider the book will prove of considerable utility to those for whom it has been specially compiled.

Bath and West and Southern Counties Society.

EXETER MEETING, 1899.

JUDGES.

HORSES.

Agricultural.—W. LITTLE, Littleport, Ely, Cambs.

Hunters.—Rev. C. LEGARD, Cottesbrook Rectory, Northampton.

Hackneys and Ponies.—W. FLANDERS, Witcham House, Witcham, Ely, Cambs.

Harness.—J. F. FOWLER, Norton Malreward, near Bristol; E. A. HARD-
VICKE, Newtons, Kewstoke, Weston-super-Mare.

CATTLE.

Devon.—E. F. MAUNDER, Crichel, Wimborne.

South Devon.—J. S. HALLETT, Sherford, Brixton, Plympton.

Shorthorn.—H. BUTLER, Badminton, Chippenham; W. GRAHAM, Eden
rove, Bollon, Penrith.

Hereford.—A. P. TURNER, The Leen, Pembroke.

Sussex.—W. WOOD, Jun., Hassocks, Sussex.

Jersey.—W. E. BUDGETT, Henbury, Bristol; E. MATHEWS, Chequers
ead, Potters' Bar, Middlesex.

Guernsey.—J. C. FORSTER, Clatford Mills, Andover.

Kerry and Dexter.—G. TITUS BARHAM, College Farm, Finchley.

Butter Tests.—E. MATHEWS, Chequers Mead, Potters' Bar, Middlesex;
D. TOOGOOD PARSONS, Ashurst Place, Langton, Tunbridge Wells.

SHEEP.

Cotswold.—M. SAVIDGE, Shipton-under-Wychwood, Oxon.

Devon Longwooled.—W. H. GIBBINGS, Walson, Bow, North Devon.

South Devon.—W. H. BARONS, Easton, Kingsbridge.

Southdown.—W. TOOP, Westergate, Chichester.

Hampshire.—G. BLAKE, Red House, Amesbury, Wilts.

Shropshire.—R. BROWN, The Hall, Ruyton XI. Towns, Salop.

Oxford Down.—J. TREADWELL, Upper Winchenden, Aylesbury.

VOL. X.—F. S.

Somerset and Dorset Horned.—E. G. LEGG, Melplash Court, Melplash, Dorset.

Exmoor.—A. S. LOVELACE, Leigh, Dulverton, Somerset.

Dartmoor.—J. DREW, Artiscombe, Tavistock.

PIGS.

Berkshire.—H. HUMFREY, Shippon, Abingdon.

Large, Middle, and Small White or Black, and Tamworth.—Major F. A. WALKER-JONES, Little Mollington, Chester.

POULTRY.

W. B. TEGETMEIER, Alexandra Grove, near Finchley; P. PEECEVAL, Somerset Court, Brent Knoll.

PRODUCE.

Cheese.—J. HUDSON, Jun., Ludgate Hill, London, E.C.

Butter and Cream.—Prof. CARROLL, Royal Albert Farm, Glasnevin, Dublin.

Cider.—J. H. HILL, New Take, Staverton, Totnes.

BUTTER-MAKING, SHOEING, AND MILKING.

BUTTER-MAKING.

Prof. CARROLL, Royal Albert Farm, Glasnevin, Dublin; D. A. GUN-CHRIST, B.Sc., University Extension College, Reading.

SHOEING.

J. M. PARKER, M.R.C.V.S., 9½, Moor Street, Birmingham; Prof. W. PRITCHARD, M.R.C.V.S., F.C.S., 5, Regent's Park Road, London, N.W.

MILKING.

G. ADAMS, Royal Prize Farm, Faringdon, Berks.

PRIZE AWARDS, 1899.

* An animal designated in this list as the "reserve number" is entitled, *additionally*, to succeed to any prize that may become vacant in its class by reason the animal placed above it by the Judges failing afterwards to qualify.

† Animals, where not otherwise stated, may be considered to have been bred the Exhibitor.

ABBREVIATIONS EXPLAINED:—S., sire; d., dam; s. of d., sire of dam; y., year; m., month; w., week; d., day; R., Reserve; V. H. C., Very Highly Commended; C., Highly Commended; C., Commended.

All ages calculated to May 24, 1899.

HORSES.

FOR AGRICULTURAL PURPOSES.—SHIRE.

(Eligible for the Shire Horse Society's Stud Book.)

CLASS 1.—*Shire Stallion, foaled before 1897.* [5 entries.]

I. (£20.)—J. BUCKNELL, Cannington, Bridgwater, bay, **Duke ofarence 3rd**, foaled 6th May, 1891; s., Prince of Orange (8055); d., agdon Cloddy; s. of d., Ramsey Hero (2880).

II. (£10.)—THE DIRECTORS OF CONVICT PRISONS, Princetown, Devon, own, **Holcombe Conqueror**, foaled May, 1895, bred by B. J. Bucknell, Holcombe Barton, Somerset; s., Gurth 2nd (14,073); d., Holcombe Blossom 3,787; s. of d., Hitchin Conqueror (4458).

R.—G. JEFFERY and SON, Manor Hotel, Dousland, Yelverton, Devon, y., **Warson Wonder**, foaled 25th June, 1896; s., Duffield Champion 1,395; d., Damsel (vol. ii.).

CLASS 2.—*Shire Stallion, foaled in 1897.* [5 entries.]

I. (£20.)—A. RANSOM, Hitchin, Herts, bay, **Hitchin Ringleader** 7,397, bred by E. E. Harcourt Vernon, Grove, Retford; s., Calwich airloom; d., Grove Vera; s. of d., Harold (3703).

II. (£10.)—LORD LLANGATTOCK, The Hendre, Monmouth, bay, **Hendre onqueror**; s., Prince Harold (14,228); d., Nyn Lively (17,136); s. of d., itebin William the Conqueror (7399).

R.—EARL BATHURST, Cirencester Park, Gloucestershire, brown, **Cloester sau Harold** (17,258); s., Markeaton Royal Harold (15,225); d., Rokeby lle (13,293); s. of d., Big Ben (3459).

CLASS 3.—*Shire Colt, foaled in 1898.* [8 entries.]

I. (£15.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, bay, **Ludrough Prince William** (vol. xxi.), bred by T. Bond, Ludborough, uth, Lincolnshire; s., Double X William (13,994); d., Ludborough incess Royal; s. of d., Mirfield Admiral (6142).

iv *Prizes awarded to Horses for Agricultural Purposes.*

II. (£10.)—R. W. HUDSON, Danesfield, Great Marlow, bay, **Danesfield Duke**; s., Stonewall (15,375); d., Duchess of Bridgwater 4th (7947); s. of d., Shrewsbury (4681).

III. (£5.)—J. HAWKINS, Stud Farm, Bristol Road, Bridgwater, bay, bred by E. A. Hardwick, Kewstoke, Weston-super-Mare; s., Calwich Prince; d., Cannock Venture; s. of d., Worcester.

R.—G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, bay, **Puckrup Crown Prince**; s., Hendre Crown Prince (16,177); d., Judy 3rd (5050); s. of d., Electric (3069).

CLASS 4.—Shire Mare and Foal, or in-Foal. [6 entries.]

I. (£20.)—R. W. HUDSON, Danesfield, Great Marlow, bay, **Saxon Heroine**, foaled 1895, bred by Sir W. Gilbey, Bart., Elsenham Hall, Essex; s., Tudor Harold (14,380); d., Florrie (12,339); s. of d., Electric (3069); with foal by Blythwood Conqueror (14,997).

II. (£10.)—B. J. BUCKNELL, Holcombe Barton, Wellington, Somerset, bay, **Holcombe Blossom** (16,787), foaled June 24, 1892; s., Hitchin Conqueror (4458); d., Flower (vol. xiii., 12,549); s. of d., Champion of England (2553); with foal by Prince Harold (14,228).

III. (£5.)—T. CHAPMAN, Orchard Portman, Taunton, bay, **Orchard Queen** (18,700), foaled 1893; s., Prince William (3956); d., Orchard Venture (10,616); s. of d., Kilham's Matchless (4500); with foal by Orchard Willow (13,415).

R.—Sir W. H. WILLS, Bart., Coombe Lodge, Blagdon, R.S.O., brown, **Waresley Dona**, foaled 1892, bred by Capt. H. C. Duncombe, Waresley Park, Sandy, Hunts; s., Bury Victor Chief (11,105); d., Alice; s. of d., Premier (2646); with foal by Calwich Prince.

CLASS 5.—Shire Filly or Gelding, foaled in 1896. [7 entries.]

I. (£10) and Gold Medal.*—LORD LLANGATTOCK, The Hendra, Monmouth, chestnut, **Tatton Bessie**, bred by Mrs. Kirby, Rosacre, Lancashire; s., Ganymede 2nd (5874); d., Diamond (6169); s. of d., Crownwell (2415).

II. (£5.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, brown, **Bessie** (22,915), bred by Mr. E. Appleby, Rosten, Ashbourne; s., Rocks Harold (14,822); d., Jolly; s. of d., Markeaton Conqueror (11,823).

III. (£3.)—W. B. BARRATT, Burnworthy House, Honiton, light bay, **Madame**; d., Diment.

CLASS 6.—Shire Filly or Gelding, foaled in 1897. [8 entries.]

I. (£10.)—R. W. HUDSON, Danesfield, Great Marlow, bay, **Tatton Tapestry**, bred by Lord Egerton, Tatton Park, Knutsford; s., Royal William 2nd (12,207); d., Tartan (13,627), s. of d., Royal Sandy (3993).

II. (£5.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, bay, **Royal Rose**, bred by W. and J. Thompson, Barrons Park Stud, Deccord, Leicester; s., Regent 2nd (6316); d., Embargo (18,172); s. of d., Bar None (2888).

III. (£3.)—LORD LLANGATTOCK, The Hendre, Monmouth, bay, **Kelvedon Marguerite**, bred by Sir Henry Ewart, K.C.B., Kelvedon,

* Given by the Shire Horse Society, a Gold Medal, value £10, for Best Mare or Filly in Class 4, 5, 6, or 7, under Conditions 46, stated in Prize Schedule.

Prizes awarded to any Agricultural Breed except Shire. v

Essex; s., Curf Duncan (15,070); d., Nyn Pink (17,138); s. of d., Hitchin Duke (9586).

R.—G. COWING, Yatesbury, Calne, bay, **Burstead Barmaid**, bred by — Boughtwood, Great Burstcad, Essex; s., Parkside (13,436); d., Manby Blossom (20,364); s. of d., Wainfleet Barman (12,604).

H. C.—G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, dark chestnut; s., Hitchin Drayman 2nd (13,165); d., Judy 3rd (5050); s. of d., Electric 3069).

CLASS 7.—Shire Filly or Gelding, foaled in 1898. [8 entries.]

I. (£10) and R. for Medal.*—LORD ROTHSCHILD, Tring Park, Tring, Herts, grey, **Fairy Queen**; s., Paxton (S.H.S.B. 4604); d., Fairy Tale S.H.S.B., vol. ix. p. 367; s. of d., Aladdin (2969).

II. (£5).—R. W. HUDSON, Danesfield, Great Marlow, bay, **Sunflower of Hitchin**, bred by A. Ransom, Hitchin, Herts; s., Marco (16,802); s., Hitchin Sunbeam (16,786); s. of d., Harold (3703).

III. (£3).—G. COWING, Yatesbury, Calne, chestnut, **Golden Queen**, bred by W. Drackley, Burton House, Nyneaton; s., Burton Coming King (11,071); s. of d., Derbyshire (3587).

R.—B. J. BUCKNELL, Holcombe Barton, Wellington, Somerset, bay, **Holcombe Mirth**; s., Calwich Prince (15,531); d., Blyth Sylvia; s. of d., Chimney Prince (11,220).

H. C.—G. COWING, roan, **Yatesbury Gem**, bred by W. Drackley; s., Burton Coming King (11,071).

ANY AGRICULTURAL BREED EXCEPT SHIRE

CLASS 8.—Mare and Foal, or in-Foal. [3 entries.]

I. (£15).—LORDS A. and L. CECIL, Orchardmains, Tonbridge, bay, Lydesdale, **Kitty of Kirkcudbright**, foaled 1894, bred by J. Campbell, Lagnaw, Castle Douglas; s., McMeeken (9600); d., Young Kate (7045); s. of d., King Victor (1708); with foal by Cœur de Lion.

CLASS 9.—Filly or Gelding, foaled in 1896. [4 entries.]

I. (£10).—H. P. TAUNTON, Redlynch, Salisbury, roan gelding.

II. (£5).—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, bay gelding, **Prince**.

R. and Extra Local (£2).†—P. WINBOR and SON, Whipton, near Exeter, black colt, **Goliath**, bred by J. Martin, Summerland Street, Exeter; s., Orchard Fearless (14,789).

CLASS 10.—Filly or Gelding, foaled in 1897. [4 entries.]

I. (£10).—H. P. TAUNTON, Redlynch, Salisbury, chestnut.

II. (£5).—J. LINTERN, Blackabroom, Bridestowe, light bay filly, **Jubilee**; s., Reminder; d., Halcombe Flower; s. of d., Juverna.

* Given by the Shire Horse Society, a Gold Medal, value £10, for Best Mare or Filly in Class 4, 5, 6, or 7, under conditions 46, stated in Prize schedule.

† Given by the Exeter Horse Show Society for Best Exhibit, the *bond fide* property of a Resident in Devonshire, and that had been such for at least two months immediately prior to the 1st day of May, 1899.

Extra Local (£2).*—J. COWLING and SONS, Hill Barton, Okehampton, dark brown filly **Maud**; s., Juverna 3rd; d., Blossom; s. of d., Matchless Mate.

HUNTERS.

CLASS 11.—*Hunter Mare and Foal, or in-Foal.* [4 entries.]

I. (£20) and Special.†—T. D. JOHN, St. Fagans, Cardiff, bay, **The Witch** (V.C. 1653, H.I.S., vol. vii.), foaled 1884, bred by W. R. H. Tyler, Rodhuish, Taunton; s., The Ghost; d., Ida; s. of d., Marsh Heron; with foal by Chari.

II. (£10).—F. W. BARLING, M.R.C.V.S., The New House, Ross, Herefordshire, chestnut, **Stella**, foaled 1893 (entered in Hunters D.S.B., vol. viii.), bred by P. Shelly, Ballywater, Callan, Ireland; s., Herbertstown; s. of d., The Lawyer; with foal by Whisperer.

R. & H. C.—J. and W. MADGE, The Barton, Spreyton, Devon, chestnut, in-foal, **Gaylass**.

H. C.—F. S. MERSON, Doniford, Watchet, brown, **Nellie**, foaled 1889, bred by — Evans, Withiel Florey; s., The Ghost; with foal by Golden Pippin.

CLASS 12.—*Hunter Mare or Gelding, foaled in 1895.* [8 entries.]

I. (£20).—CLARK and KETTLEWELL, North Ferriby, Brough, E. Yorks, chestnut, **Baby**, bred by J. Ingledew, Lowfields, Bedale, Yorkshire; s., Knight of Ruby; d., Jess; s. of d., Volunteer.

II. (£10) and Special (£5).*—A. V. LORAM, Pinhoe, Exeter, brown gelding, **Bacchanalian**; s., Bacchus; s. of d., Old Arthur.

III. (£5) and **R.** for Special.*—J. OSMOND, Woodrow, Bampford Speke, near Exeter, bay filly, **Acorn**, bred by Capt. Wrigley, Dunsland Court, Jacobstowe; s., Mountain Dew; d., Florian.

R. & H. C.—J. MARTIN, Woodhouse, Great Torrington, bay mare, **Tip Top**; s., Tiber; d. Vengeance.

CLASS 13.—*Hunter Filly or Gelding, foaled in 1896.* [8 entries.]

I. (£15).—T. D. JOHN, Chalkean's Stud Farm, St. Fagans, Cardiff, chestnut gelding, **Huntsman**, bred by J. R. Raley, Cayton, Scarborough; s., Roxius; d., Black Bess; s. of d., Camelot.

II. (£10).—J. FLOWER, Chilmark, Salisbury, chestnut gelding, **Unioack**; s., Yard Arm; d., Lottery (1099).

III. (£5) and Special (£3).*—G. P. FINCH, The Briars, Exeter, chestnut gelding, **Master Briar**; s., Eclipse; d., Rosebede; s. of d., The Bustard.

Given by the Exeter Horse Show Society for Exhibits the *bond fide* property of Residents in Devonshire, and that had been such for at least two months immediately prior to the 1st day of May, 1899.

Given by the Hunters' Improvement Society, a Gold Medal, or £5 and a Bronze Medal, for the Best Hunter Brood Mare in Class 11, in-foal to or with Foal at-foot, by a Thoroughbred Horse or Registered Hunter Sire, under Conditions 47, stated in Prize Schedule.

R. & H. C.—**YEO BROS.**, Durnford Mews, Plymouth, chestnut gelding, **Amble Lad**, bred by C. Menhenick, Amble, Wadebridge, Cornwall; s., **Viterion**; d., **Elegance**; s. of d., **Glenmore**.

H. C.—**J. PETHICK**, Norley House, Plymouth, chestnut gelding, **Plinth**:—and **Major-General JAGO-TRELAWNY**, Coldrenick, Menheniot, Cornwall, and **Athenæum Terrace**, Plymouth, bay gelding, **Siebel**; s., **Sentinel**; d., **Daisy** (989, vol. vi.); s. of d., **Snowstorm**.

C.—**W. LETHBRIDGE, J.P.**, Wood, South Tawton, Okehampton, chestnut filly, **Miss May**; s., **Polemic**; d., **Norah**.

CLASS 14.—Hunter Filly or Gelding, foaled in 1897. [8 entries.]

I. (£10).—**O. N. HOLT-NEEDHAM**, Castle Cary, Somerset, chestnut filly, **Killarney**, bred by J. C. Taylor, High Street, Milborne Port, Somerset; s., **Yard Arm** (vol. xvi. p. 99); d., **Lady Ryan** (1461); s. of d., **Colonel Ryan** (vol. xv., p. 637).

II. (£7) and Special (£3).*—**Major-General JAGO-TRELAWNY**, Coldrenick, Menheniot, Cornwall, and **5. Athenæum Terrace**, Plymouth, bay gelding, **Hybarite**; s., **Subduer**; d., **Daisy** (989, vol. vi.); s. of d., **Snowstorm**.

III. (£3).—**H. B. CORY**, Druidstone, Castleton, near Cardiff, brown filly, **Satisfaction**, bred by J. Homes, Ledbury, Herefordshire; s., **Red Eagle**; d., **Clitha** (1332).

R. & H. C. and R. for Special.*—**J. LEMON**, Smemington Farm, Tawstock, Barnstaple, roan gelding, **Jeddah**; s., **Warrior**.

H. C.—**Messrs. BEYNON**, The Green Farm, near Chepstow, grey gelding, **Affy**; s., **Apollo**; d., **Dolly**:—and **W. K. WYATT**, Eastholme, Newton St. Yves, Exeter, bay gelding, **Kitchener**; s., **Master Lancastrian**; d., **Mayflower**; s. of d., **Eclipse**.

CLASS 15.—Hunter Filly, Colt or Gelding, foaled in 1898.

[7 entries.]

I. (£10).—**B. G. H. GEE**, Locks Mills House, Bristol, chestnut colt, **Orick**; s., **Yard Arm**; d., **Zoe** (H.I.S., 1274); s. of d., **Zeal**.

II. (£7).—**O. N. HOLT-NEEDHAM**, Castle Cary, Somerset, chestnut filly, **Dancing Girl**, bred by C. W. Francis, Horsington, Templecombe, Somerset; s., **Pantomime**; d., **Clonsilla** (1333).

III. (£3) and Special (£3).*—**G. P. FINCH**, The Briars, Exeter, chestnut colt, **Planet**; s., **Eclipse**; d., **Rosebede**; s. of d., **The Bustard**.

R. & H. C. and R. for Special.*—**Major-General JAGO-TRELAWNY**, Coldrenick, Menheniot, Cornwall, and **5. Athenæum Terrace**, Plymouth, chestnut gelding, **Satyr**; s., **Subduer**; d., **H. M.**

H. C.—**Messrs. BEYNON**, Green Farm, near Chepstow, chestnut filly, **Dolly**; s., **Pirate 2nd**; d., **Glufulus**:—and **R. HODDINOTT**, Springfield House, Gillingham, Dorset, chestnut gelding, **Actor**, bred by J. W. Shute, Ox Lane Farm, Motcombe, Shaftesbury, Dorset; s., **Pantomime**; d., **Ruby** (I.P.B., 1601); s. of d., **Marioni**.

* Given by the Exeter Horse Show Society for Exhibits the *bona fide* property of Residents in Devonshire, and that had been such for at least two months immediately prior to the 1st day of May, 1899.

CLASS 16.—Hunter Mare or Gelding, calculated to carry 13 stone and upwards. [5 entries.]

(Given by the Exeter Horse Show Society.)

Exhibits in Class 16 must have been the *bonâ fide* property of Tenant Farmers occupying not less than fifty acres of land in Devonshire, and following the occupation of farming for a living, and must have been in their possession for at least two months immediately prior to the 1st day of May, 1899. No previous winner of the 1st Prize in this Class at the Exeter Horse Show could compete.

I. (£8.)—A. V. LORAM, Pinhoe, Exeter, brown gelding, **Bacchanalian**; s., Bacchus; s. of d., Old Arthur.

II. (£5.)—J. MARTIN, Woodhouse, Great Torrington, bay mare, **Tip Top**; s., Tiber; d., Vengeance.

R. & H. C.—G. LORAM, Pinhoe, Exeter, chestnut gelding, **Master of Arts**, foaled 1894; s., Marioni.

CLASS 17.—Hunter Mare or Gelding, that had been regularly hunted during the past season with any recognised pack of hounds in Devonshire. [6 entries.]

(Given by the Exeter Horse Show Society.)

Ridden by the owner or his son, or a *bonâ fide* subscriber to such pack. (A certificate from the Master of Hounds to be produced.)

I. (£5.)—J. A. COLLINGS, Heavitree Road, Exeter, chestnut gelding, **Corky Boy**, foaled 1893; s., Uncle Sam.

II. (£3.)—J. PETHICK, Norley House, Illymouth, chestnut gelding, **Pensioner**, foaled 1893.

R. & H. C.—G. P. FINCH, The Briars, Exeter, chestnut mare, **Miss Eclipse**, foaled May, 1893, bred by C. Mortimer, Mordard; s., Eclipse; d., Lasey; s. of d., Mariner.

SPECIAL PRIZES GIVEN BY THE HUNTERS' IMPROVEMENT SOCIETY.

A Silver Medal, for the Best Hunter Filly in Classes 13, 14, or 15, not exceeding three years old (foaled in 1896, 1897 or 1898), under Conditions 48, stated in Prize Schedule. [12 entries.]

Silver Medal.—O. N. HOLT-NEEDHAM, Casile Cary, Somerset, chestnut filly, **Killarney**, bred by J. C. Taylor, High Street, Milborne Port, Somerset; s., Yard Arm (vol. xvi. p. 99); d., Lady Ryan (1461); s. of d., Colonel Ryan (vol. xv. p. 637).

R.—H. B. CORY, Druidstone, Castleton, near Cardiff, brown filly, **Satisfaction**, bred by J. Homes, Ledbury, Herefordshire; s., Red Eagle; d., Clitha (1332).

A Silver Medal, for the Best Hunter of either Sex and of any Age, got by a Premium Stallion (including the Silver Medal Sires at the Hunter Spring Shows) or by a Registered Hunter Sire out of a Registered Mare, and not having previously won a corresponding Medal during 1899, under Conditions 49 stated in Prize Schedule. [16 entries.]

Silver Medal.—O. N. HOLT-NEEDHAM, Castle Cary, Somerset, chestnut filly, **Killarney**, bred by J. C. Taylor, High Street, Milborne Port,

Somerset; s., Yard Arm (vol. xvi. p. 99); d., Lady Ryan (1461); s. of d., Colonel Ryan (vol. xv. p. 637).

R.—B. G. H. GEE, Locks Mills House, Bristol, chestnut colt, **Yorick**; s., Yard Arm; d. Zoe (H.I.S., 1274); s. of d., Zeal.

HACKNEYS.

CLASS 18.—*Hackney Mare and Foal, or in-Foal.* [1 entry.]

I. (£15).—E. M. WHITTING, Totterdown, Weston-super-Mare, bay, **Olive Tree** (H.I.S., 8343), foaled 1889, bred by W. S. Forster, Rurwood, Maidstone; s., Lord Derby 2nd (417); d., Lady Audley; s. of d., Royal George (653); with foal by Royal Danegelt (5785).

CLASS 19.—*Hackney Mare or Gelding, foaled before 1895.* [16 entries.]

I. (£10).—W. FOSTER, Mel-Valley, Moseley, dun gelding, **Norbury Squire**, foaled 1891, bred by D. Cooper, Catheried, Yorks; s., Danegelt.

II. (£5).—F. J. BATCHELOR, Hopwood Stud Farm, Alvechurch, Worcester-shire, chestnut gelding, **Prince Hopwood**, foaled 1893, bred by J. Smith, Preston; s., Model (1054); d., Black Bonny; s. of d., Lord Derby 2nd (417).

III. (£3).—H. M. ROGERS, Parkventon, Helston, Cornwall, brown mare, **Regina**, foaled 1893, bred by C. H. Hart, Appletree Farm, York; s., Wreghitt's Wildfire (1224); d., Crafty (1063); s. of d., Denmark (177).

R. & H. C.—W. MORTIMORE, Saint Thomas', Exeter, chestnut mare, **Miss Cadet**, foaled 1892, bred by M. Wilson, 12, Fenchurch Avenue, London; s., Cadet (1251, H.S.B.); d., Happy Thought (673); s. of d., Model 2nd (460).

C.—J. A. COLLINGS, Heavitree Road, Exeter, chestnut gelding, **Romeo**, foaled 1894, bred by E. Coles, Manor Farm, Cricket St. Thomas, Chard; s., Fascination:—and J. PETHICK, Norley House, Plymouth, chestnut mare, **Phyllis**.

CLASS 20.—*Hackney Mare or Gelding, foaled in 1895 or 1896.* [4 entries.]

I. (£10).—E. P. NORTHEY, Higher Bowden, Okehampton, Devon, brown filly, **Crumbs**, foaled 1895, bred by — Yelland, Brentor, near Tavistock; s., Dry Toast.

II. (£5).—J. SHEARER, 8, Bartholomew Terrace, Exeter, chestnut, **Goldsmith Pussy** (1400, H.I.S.), foaled May, 1895; s., Exchange; d., Nancy; s. of d., Tinker.

R.—G. H. G. ARDEN, Southam, near Exeter, roan mare, **Lady Horace**, foaled March 25, 1896; s., Sir Horace (5402, H.S.B.); d., Morella.

CLASS 21.—*Hackney Filly or Gelding, foaled in 1897.* [2 entries.]

I. (£10).—H. B. CORY, Druidstone, Castleton, near Cardiff, chestnut filly, **Druidstone Duchess**; s., Agility (2799); d., Dainty Duchess (7745); s. of d., Garton Duke of Colnaught (3009, vol. xii.).

II. (£5).—F. J. BATCHELOR, Hopwood Stud Farm, Alvechurch, Worcester-shire, chestnut filly, **Arline**; s., Success 3rd; d., Lady Alington; s. of d., Danegelt.

CLASS 22.—*Hackney Filly, Colt, or Gelding, foaled in 1898.*

[2 entries.]

I. (£10.)—R. S. FORESTIER-WALKER, Castleton, Cardiff, chestnut colt, **Maymint**, br. d by Sir W. Gilbey, Bart., Elsenham; s., **May Royal** (5316); d., **Mintdrop** (2311); s. of d., **Prickwillow** (629).

CLASS 23.—*Mare or Gelding, calculated to carry 15 stone at least, not over 15 hands high and not less than four years old, the bond fide property of a Resident in Devonshire, and that has been such for at least two months immediately prior to the 1st of May, 1899.*
[3 entries.]

(Given by the Exeter Horse Show Society.)

I. (£8.)—J. PETHICK, Norley House, Plymouth, chestnut gelding, **Plympton**, foaled in 1894; s., **Salt House Hero**.

II. (£5.)—T. YELVERTON, Venn Ottery, Ottery St. Mary, Devon, bay gelding, **The Doctor**, foaled 1892.

PONIES.

CLASS 24.—*Pony Mare or Gelding, four years old or over, exceeding 13 hands and not exceeding 14 hands.* [15 entries.]

I. (£10.)—W. FOSTER, Mel-Valley, Moseley, black gelding, **Ranji**, foaled 1894; s., **Cassius**.

II. (£5.)—W. FOSTER, black mare, **Queen Bess**, foaled 1895; s., **Recurr** (1884); d., **Black Bess** (6408); s. of d., **Cannon Ball**.

III. (£8) and Special (£3).*—G. H. G. ARDEN, Southam, near Exeter, bay mare, **Magic**, foaled 1891; s., **Lord Bang**.

R. & H. C. and R. for Special.*—W. MORTIMORE, St. Thomas, Exeter, brown gelding, **Badminton**, foaled 1894, bred by T. Mitchell, Eccleshill, Bradford, Yorks; s., **Lord Ratler** (2566); d., **Lady Portland** (5624); s. of d., **Lord Derby 2nd** (417).

C.—G. J. PEPPIN, Harpford, Ottery St. Mary, bay, **Dandy**;—and S. R. SELMAN, 150, White Ladies' Road, Clifton, bay Welsh mare, **Roli Poli**, bred by — Morgan, Cardigan.

CLASS 25.—*Pony Mare or Gelding, four years old or over, not exceeding 13 hands.* [11 entries.]

I. (£10.)—W. FOSTER, Mel-Valley, Moseley, bay gelding, **Novelty**, foaled 1893.

I. (£5.)—H. M. ROGERS, Parkventon, Helston, Cornwall, black gelding, **Wigger Boy**, foaled 1893.

II. (£3.)—S. W. TOMKINS, The Elms, Woodstock Road, Redland, Bristol, brown gelding, **Greatheart**.

R. & H. C. and Special (£3).*—G. WILLIAMS, 85, West Street, Tavistock, Devon, Dartmoor mare, **Magic 2nd**, foaled May, 1894, bred by — Mander, Torne, Marytavy, Devon; d., **Nancy**; s. of d., **King of the Forest**.

* Given by the Exeter Horse Show Society for Exhibits the *bond fide* property of Residents in Devonshire, and that had been such for at least two months immediately prior to the 1st day of May, 1899.

C. and **R.** for Special.*—J. R. T. KINGWELL, Great Aish, South Brent, brown Dartmoor gelding, **Cock Sparrow**, foaled May 20, 1894; s., Dartmoor; d., Jessie.

HARNESSES.

CLASS 26.—*Pair of Carriage Horses (Mares or Geldings), 15 hands or over, driven in double harness on the second day of Show.* [3 entries.]

I. (£15.)—GODSELL and BUTCHER, Victoria Hotel, Bristol, browns, **Lady Lofty** and **Kenric**.

II. (£5.)—J. A. COLLINGS, Heavitree Road, Exeter, geldings.

CLASS 27.—*Mare or Gelding, 15 hands or over, driven in single harness on the second day of Show.* [5 entries.]

I. (£8.)—A. BUTCHER, Victoria Hotel, Bristol, brown, **Kenric**.

II. (£4.)—W. ROACH, Exeter, bay gelding, **Gendarme**.

R. & H. C.—J. A. COLLINGS, Heavitree Road, Exeter, brown, **Steamer**.

H. C.—W. EDGER, Fremington, North Devon, brown gelding, **John Barleycorn**, foaled May 5, 1893, s., Freshwater; d., Molly; s. of d., Outfit.

CLASS 28.—*Tandems (Mares or Geldings), 15 hands or over, driven in harness on the second day of Show.* [1 entry.]

I. (£15.)—GODSELL and BUTCHER, Victoria Hotel, Bristol, browns, **Lady Lofty** and **Kenric**.

CLASS 29.—*Mare or Gelding, over 14 hands and under 15 hands, driven in harness on the third day of Show.* [15 entries.]

I. (£8.)—D. S. CARR, Twerton-on-Avon, Bath, roan, **Lady Bang**, foaled 1892.

II. (£4.)—F. J. BATCHELOR, Hopwood Stud Farm, Alvechurch, Worcestershire, chestnut gelding, **Prince Hopwood**, foaled 1893, bred by J. Smith, Preston; s., Model (1054); d., Black Bonny; s. of d., Lord Derby 2nd (417).

III. (£2.)—Mrs. W. W. ROBERTSON, Blount's Court, Reading, black mare, **Gavotte**, foaled 1894, bred by T. Mitchell, The Park, Eccleshill, Bradford; s., Lord Rattler (2566); d., Faithful; s. of d., Foston Fireaway.

H. C.—W. FOSTER, Mel-Valley, Moseley, chestnut gelding, **The Squire**, foaled 1892, bred by Halewood Stud Co., Halewood, Liverpool; s., Danegelt; d., Lady Hotham; s. of d., Lord Derby 2nd;—and H. M. ROGERS, Park-venton, Helston, Cornwall, brown mare, **Regina**, foaled 1893, bred by C. H. Hart, Appletree Farm, York; s., Wreghitt's Wildfire (1224); d., Crafty (1063); s. of d., Denmark (177).

C.—J. PETHICK, Norley House, Plymouth, black brown gelding, **Lord Bang**, foaled 1891; s., Lord Bang.

* Given by the Exeter Horse Show Society for Exhibits the *bonâ fide* property of Residents in Devonshire, and that had been such for at least two months immediately prior to the first day of May, 1899.

CLASS 30.—Pair of Horses (Mares or Geldings), under 15 hands, driven in double harness on the third day of Show. [7 entries.]

I. (£15).—D. S. CARR, Twerton-on-Avon, Bath, roans, **Lady Bang**, foaled 1892, and **Lord Bang**, foaled 1893.

II. (£5).—F. J. BATCHELOR, Hopwood Stud Farm, Alvechurch, Worcester-shire, chestnut gelding, **Prince Hopwood**, foaled 1893, bred by J. Smith, Priston; s., Model (1054); d., Black Bonny; s. of d., Lord Derby 2nd (417); and chestnut mare, **Lady Valeswood**, foaled 1894.

III. (£2).—J. PETHICK, Norley House, Plymouth, black brown geldings, **Lord Bang 2nd**; s., Rob Roy; and **Lord Bang**, foaled 1891; s., Lord Bang.

H. C.—J. A. COLLINGS, Heavitree Road, Exeter, chestnut gelding, **Romeo**, foaled 1894, bred by E. Coles, Manor Farm, Cricket St. Thomas, Chard; s., Fascination; and chestnut mare, **Juliet**, foaled 1893.

C.—G. H. G. ARDEN, Southam, near Exeter, bay mare, **Magie**, foaled 1891; s., Lord Bang; and **W. MORTIMER**, St. Thomas, Exeter, brown gelding, **Badminton**, foaled 1894, bred by T. Mitchell, Eccleshill, Bradford, Yorks; s., Lord Rattler (2566); d., Lady Portland (5624); s. of d., Lord Derby 2nd (417).

CLASS 31.—Tandems (Mares or Geldings), under 15 hands, driven in harness on the third day of Show. [10 entries.]

I. (£15).—D. S. CARR, Twerton-on-Avon, Bath, roans, **Lady Bang**, foaled 1892; and **Lord Bang**, foaled 1893.

II. (£5).—F. J. BATCHELOR, Hopwood Stud Farm, Alvechurch, Worcester-shire, chestnut gelding, **Prince Hopwood**, foaled 1893, bred by J. Smith, Priston; s., Model (1054); d., Black Bonny; s. of d., Lord Derby 2nd (417); and chestnut mare, **Lady Valeswood**, foaled 1894.

III. (£2).—J. PETHICK, Norley House, Plymouth, black brown geldings, **Lord Bang 2nd**; s., Rob Roy; and **Lord Bang**, foaled 1891; s., Lord Bang.

C.—G. H. G. ARDEN, Southam, near Exeter, bay mare, **Magie**, foaled 1891; s., Lord Bang; and **W. MORTIMER**, St. Thomas, Exeter, brown gelding, **Badminton**, foaled 1894, bred by T. Mitchell, Eccleshill, Bradford, Yorks; s., Lord Rattler (2566); d., Lady Portland (5624); s. of d., Lord Derby 2nd (417);—and **H. V. JAMES**, Backwell, near Bristol, grey, **The Nipper**; and his bay mare, **Ragged Robin**.

CLASS 32.—Horse (over 15 hands) and Vehicle. [3 entries.]

(Given by the Exeter Horse Show Society.)

Bonâ fide the property of a Tradesman or Firm carrying on business within the Parliamentary Borough of Exeter, which had been regularly used for the purpose of his business for at least three months immediately prior to the 1st day of May, 1899. The general turn out was taken into consideration. Exhibited on the fourth day of Show.

I. (£5).—J. FINNEMORE, 16, Sivell Place, Heavitree, bay mare, **Madam**.

II. (£3).—J. SAMPSON, Brickworks, Exeter.

H. C.—J. DAVIDSON, Alphington Road, Exeter, bay mare, **Holley**, foaled 1891, bred by Major-Gen. E. W. Holley, Okehampton.

CLASS 33.—Mare or Gelding, over 13 hands and not over 14 hands, driven in harness on the fourth day of Show. [15 entries.]

I. (£10.)—E. S. GODSELL, Stroud, Gloucestershire, chestnut, **Jersey dly.**

II. (£5.)—W. FOSTER, Mel-Valley, Moseley, black mare, **Queen Bess**, bred 1895; s., Recruit (1884); d., Black Bess (6408); s. of d., Canon Ball.

III. (£2.)—W. FOSTER, black gelding, **Ranji**, foaled 1894; s., Cassius.

R. & H. C.—G. H. G. ARDEN, Southam, near Exeter, bay mare, **Magic**, bred 1891; s., Lord Bang.

H. C.—W. MORTIMORE, St. Thomas, Exeter, brown gelding, **Badminton**, bred 1894, bred by T. Mitchell, Eccleshill, Bradford, Yorks; s., Lord Attler (2566); d., Lady Portland (5624); s. of d., Lord Derby 2nd (417);—and S. R. SELMAN, 150, White Ladies' Road, Clifton, dark brown gelding, **Charlie**.

CLASS 34.—Mare or Gelding, not over 13 hands, driven in harness on the fifth day of Show. [12 entries.]

I. (£8.)—G. REYNOLDS, Twerton, Bath, dun gelding, **Cloraine**.

II. (£4.)—W. FOSTER, Mel-Valley, Moseley, bay gelding, **Novelty**, bred 1893.

III. (£2.)—H. M. ROGERS, Parkventon, Helston, Cornwall, black gelding, **igger Boy**, foaled 1893.

R. & V. H. C.—S. W. TOMKIN, The Elms, Woodstock Road, Redland, Bristol, brown gelding, **Greatheart**.

CLASS 35.—Horse (not over 15 hands) and Vehicle. [4 entries.]

(Given by the Exeter Horse Show Society.)

and vide the property of a Tradesman or Firm carrying on business within the Parliamentary Borough of Exeter, which have been regularly used for the purpose of his business for at least three months immediately prior to the 1st day of May, 1899. The general turnout was taken into consideration. Exhibited on the fifth day of Show.

I. (£3.)—R. M. FLINT, Rockfield Hall, New North Road, Exeter, strawberry roan mare, **Bess**.

II. (£1.)—J. W. BOON, 5, East Gate, Exeter, bay gelding, **Tommy**.

Classes 36 and 37 the Prizes were intended for the men in charge of the horses.

CLASS 36.—Mare or Gelding, the property of and worked by the Corporation of Exeter. Exhibited in harness on the fifth day of Show.

I. (£1.)—Brand No. 45.

II. (10s.)—Brand No. 34.

III. (7s. 6d.)—Brand No. 41.

IV. (5s.)—Brand No. 9.

R.—Brand No. 35.

CLASS 37.—*Mare or Gelding, which had been worked in the Exeter Show Yard, the property of a Railway Company running into Exeter. Exhibited in harness on the fifth day of Show.*

I. (£1.)—GREAT WESTERN RAILWAY, 1948.

II. (10s.)—GREAT WESTERN RAILWAY, 1518.

III. (7s. 6d.)—LONDON AND SOUTH WESTERN RAILWAY, 378.

IV. (5s.)—GREAT WESTERN RAILWAY, 1379.

R.—LONDON AND SOUTH WESTERN RAILWAY, 356.

CATTLE.

(In the Classes for South Devon Cattle and South Devon, Dartmoor, and Exmoor Sheep, £150 of the amount given in Prizes was contributed by the Devon County Agricultural Association.)

DEVON.

CLASS 38.—*Devon Bull, calved in 1895 or 1896. [8 entries.]*

I. (£15.)—Sir W. R. WILLIAMS, Bart., Upcott, Pilton, Barnstaple, **Robert George**, born June 14, 1896; s., Pretty Middling 2nd (3172); d., Fiction 3rd (11,889); s. of d., Captain (2204).

II. (£10.)—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Duke of Pound 29th** (3725), born January 28, 1896, bred by A. C. Skinner, Bishop's Lydeard, Somerset; s., Masterpiece (2837); d., Duchess 35th (13,075); s. of d., Lord Wolseley (2063).

III. (£5.)—Right Hon. Sir W. H. WALROND, Bart., M.P., Bradfield, Cullompton, Devon, **Royalist 2nd of Pound** (3807), born February 2, 1896, bred by A. C. Skinner; s., Masterpiece (2837); d., Rosalie (10,175), s. of d., Rob Roy (1831).

R.—J. C. WILLIAMS, Caerhays, St. Austell, **Woodcock**, born January 27, 1896; s., Pretty Middling (2859); d., Waterhen (11,885); s. of d., Duke of Flitton 17th (1544).

CLASS 39.—*Devon Bull, calved in 1897. [6 entries.]*

I. (£15.)—A. BOWERMAN, Capton, Williton, Taunton, **Sir Walter** (3959), born April 8, 1897; s., Lord Culverhay (3469); d., Apricot (13,743); s. of d., Palmerston (2474).

II. (£10.)—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Lord Passmore 9th of Pound**, born June 2, 1897, bred by A. C. Skinner, Bishop's Lydeard, Somerset; s., Masterpiece (2837); d., Lady Passmore 9th (12,435); s. of d., Duke of Pound 16th (3391).

III. (£5.)—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Jubilee** (3943), born January 11, 1897; s., Tregothnan (2902); d., Beauty 9th (12,118); s. of d., Duke of Wellington (1955).

I.—Sir C. T. D. AGLAND, Bart., Killerton, Exeter, **Speculator**, born May 30, 1897, bred by E. Mucklow, Whitstone Head, Holsworthy, North Devon; s., Whitstone Magna Charta (3527); d., Whitstone Cherry Blossom (948); s. of d., The Vicar (2156).

CLASS 40.—Devon Bull, calved in 1898. [7 entries.]

I. (£10).—LORD CLINTON, Heanton Satchville, Dolton, **The Baron 2nd**, born May 31, 1898; s., The Baron; d., Carnation 4th; s. of d., Barman (71).

II. (£5).—E. PHILBRICK, Stretchacott, Frithelstock, Torrington, **Duke of stretchacott**, born February 1, 1898; s., Lord Currypool 2nd (2619); Famous (12,548); s. of d., Grand Duke (1077, vol. xxii.).

III. (£2).—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Bridegroom**, born January 8, 1898; s., Tregothnan (2902); d., Lady 9th (12,118); s. of d., Duke of Wellington (1955).

R.—A. BOWERMAN, Capton, Williton, Taunton, **Banjo**, born May 2, 1898; Harold 4th (3595); d., Cheerful (13,750); s. of d., Starlight (3514).

CLASS 41.—Devon Cow, in-Milk or in-Calf, calved before 1896.

[7 entries.]

I. (£15).—Hon. E. W. B. PORTMAN, Hestercombe, Taunton, **Hand-me 3rd** (14,665), born January 1, 1894, bred by J. Blackmore, Durston, Somerset; s., Nobleman (2848); d., Handsome 2nd (7497); s. of d., Actor.

II. (£10).—J. C. WILLIAMS, Caerhays, St. Austell, **Molly 5th** (14,885), born February 13, 1895; s., Captain (2204); d., Molly (7986); s. of d., Watkin (1846).

III. (£5).—A. BOWERMAN, Capton, Williton, Taunton, **Sally** (15,571), born January 10, 1895; s., Starlight (3514); d., Dolly 5th (9482); s. of d., Lord Ilbear (1779).

R.—C. H. CHICHESTER, Hall, Barnstaple, **Dahlia 2nd** (12,716), born June 15, 1892, bred by N. Cook, Chevithorne Barton, Tiverton; d., Dahlia; s. of d., Lord Wolseley (2063).

CLASS 42.—Devon Heifer, in-Milk or in-Calf, calved in 1896.

[8 entries.]

I. (£10).—Sir W. R. WILLIAMS, Bart., Upcott, Pilton, Barnstaple, **Fiction 2nd**, born January 1, 1896; s., Pretty Middling 2nd (3172); d., Fiction 4th (580); s. of d., Captain (2204).

II. (£5).—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Fickle**, born July 18, 1896; s., Cardsharper (3082); d., Fiction 5th (13,191); s. of d., Pretty Middling (2859).

III. (£2).—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Moss Rose 23rd** (15,428), born February 3, 1896; s., Tregothnan (2902); Moss Rose 10th (7109); s. of d., General Colley (1564).

R. & V. H. C.—J. C. WILLIAMS, **Mirabel 3rd** (15,510), born April 14, 1896; s., Afterthought (3375); d., Mirabel 2nd (13,180); s. of d., Marmalade (2280).

H. C.—A. BOWERMAN, Capton, Williton, Taunton, **Mustard** (14,976), born March 13, 1896; s., Lord Culverhay (3469); d., Apricot (13,743); s. of d., Palmerston (2474).

CLASS 43.—Devon Heifer, calved in 1897. [9 entries.]

I. (£10.)—J. C. WILLIAMS, Caerhays Castle, St. Austell, **Nessie 3rd** (16,063), born January 9, 1897; s., Afterthought (3375); d., Nessie 2nd (14,292); s. of d., Cardsharper (3082).

II. (£5.)—Sir W. R. WILLIAMS, Bart., Upcott, Pilton, Barnstaple, **Fiction 8th**, born July 14, 1897; s., Pretty Middling 2nd (3172); d., Fiction 3rd (11,889); s. of d., Captain (2204).

III. (£2.)—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Daisy 2nd** (15,991), born March 27, 1897; s., Tregothnan (2902); d., Daisy's Twin 1st (9091); s. of d., General Colley (1564).

R. & H. C.—Hon. E. W. B. PORTMAN, Hestertcombe, Taunton, **Lowton**, born January 2, 1897, bred by E. A. Buncombe, Longforth, Wellington, Somerset; s., Wellington Boy; s. of d., Myrtle Jubilee Boy (2294).

H. C.—A. BOWERMAN, Capton, Williton, Taunton, **Mistletoe** (15,566), born June 12, 1897; s., Lord Culverhay (3469); d., Poppy (13,779); s. of d., Admiral Hood (1880);—and J. C. WILLIAMS, **Diamond Necklet 8th** (16,050), born March 8, 1897; s., Pretty Middling (2859); d., Diamond Necklet 3rd (12,560); s. of d., Duke of Flitton 17th (1544).

C.—LORD CLINTON, Heanton Satchville, Dolton, **Rose of Devon**, born April 8, 1897; s., Pretty Middling 2nd (3496); d., Fidget; s. of d., General (3116).

CLASS 44.—Devon Heifer, calved in 1898. [7 entries.]

I. (£7.)—J. C. WILLIAMS, Caerhays Castle, St. Austell, born January 16, 1898; s., Cardsharper (3082); d., Waterhen 3rd (14,299); s. of d., Doleful (2384).

II. (£5.)—E. PHILBRICK, Stretchacott, Frithelstock, Torrington, **Duchess**, born May 5, 1898; s., Middling Character (3630); d., Duchess 5th; s. of d., Duke of Mornacott (2226).

III. (£2.)—A. BOWERMAN, Capton, Williton, **Lottie**, born January 8, 1898; s., Pretty Middling 3rd (3173); d., Lucy (13,766); s. of d., Starlight (3514).

R. & H. C.—E. J. STANLEY, M.P., Quantock Lodge, Bridgwater, **Quantock Princess 8th** (16,562), born March 29, 1898; s., Goodwill (3592); d., Quantock Princess 2nd (14,810); s. of d., Duke of Bridgwater (3258).

C.—J. C. WILLIAMS, born February, 1898; s., Pretty Middling (2859); d., Water Lily 14th (13,188); s. of d., Doncaster (2750).

SOUTH DEVON.**CLASS 45.—South Devon Bull, calved in 1895 or 1896. [1 entry.]**

I. (£15.)—T. B. BOLITHO, M.P., Trewidden, Penzance, **County Councillor** (570), born December 1, 1895, bred by J. P. Garland, Stockaden, Aveton Gifford; s., Councillor (164); d., Sybil Millicent (1984).

CLASS 46.—South Devon Bull, calved in 1897. [5 entries.]

I. (£15.)—J. W. HALLETT, Matford, Exminster, **Royal Prince**, born February 15, 1897, bred by W. B. H. Ash, Ringmore, Kingsbridge; s., Crown Prince 24th; d., Dove 22nd.

II. (£10.)—B. TRANT, Tregoad, Sandplace, Cornwall, **Harry** (879), born May, 1897, bred by H. Brookings, Bowden, Yealmpton, Devon; s., The Earl (40); d., Handsome 2nd (1419).

III. (£5.)—H. BROOKING, Bowden, Yealmpton, **Duke of Blagdon**, born July 2, 1897, bred by W. Pains, High House, Kingsbridge; s., Duke; d., Crocus.

R. & V. H. C.—J. W. MEATHREL, Caulston, Revelstoke, Plymouth, **Happy Lad** (994), born October, 1897, bred by H. Helmer, Wonwell Court, Kingston, Kingsbridge; s., Happy Boy (494); d., Ada 2nd (1150); s. of d., Old Fashion (98).

H. C.—J. S. WROTH, Coombe, Aveton Gifford, South Devon, **Star's Champion** (930), born April 15, 1897; s., Revelstoke Champion (428); d., Star 8th (2412); s. of d., Doncaster (27).

CLASS 47.—South Devon Bull, calved in 1898. [5 entries.]

I. (£10.)—T. B. BOLITHO, M.P., Trewidden, Penzance, **Chyandours** (63), born March 28, 1898; s., County Councillor (570); d., Diana 1st (926).

II. (£5.)—J. W. MEATHREL, Caulston, Revelstoke, Plymouth, **Prince Imperial** (1044), born March 4, 1898; s., Royalist 2nd (801); d., Princess (37); s. of d., Forester 4th.

III. (£2.)—J. S. WROTH, Coombe, Aveton Gifford, South Devon, **Star's Doncaster** (1074), born May 13, 1898; s., Doncaster (27); d., Star 5th (62); s. of d., Forester 3rd.

R.—J. S. TUCKER, Pathada, Menheniot, Liskeard, **Peter**, born April 10, 1898, bred by J. S. Ford, Hall Tor, Yealmpton; s., Norman (422); d., Lily (2511); s. of d., Marquis 2nd (325).

CLASS 48.—South Devon Cow, in-Milk or in-Calf, calved before 1896. [4 entries.]

I. (£15.)—J. W. MEATHREL, Caulston, Revelstoke, Plymouth, **Fansy** (245), born November 12, 1891; s., Richmond (115); d., Princess (437); s. of d., Forester 4th.

II. (£10.)—W. MERRY, Woodford, Plympton St. Mary, **Lovely**, born November 26, 1893; s., Sirloin (125); d., Lovely (449); s. of d., Primrose.

III. (£5.)—F. W. ROWE, Trevego, Lostwithiel, Cornwall, **Daisy Belle**, born August 5, 1893; s., Duke (165); d., Ruby 2nd (1782); s. of d., Gay Lad.

R.—W. H. B. ALE, The Elms, Ipplepen, **Pretty 3rd** (2125), born August 30, 1894; s., Nobleman (95); d., Pretty 2nd (993).

CLASS 49.—South Devon Heifer, in-Milk or in-Calf, calved in 1896. [1 entry.]

I. (£10.)—W. BRADBRIDGE, Yeat Farm, Denbury, Newton Abbot, **Crocus** (941), born March 16, 1896, bred by A. H. Pitman, Babland, Modbury; s., Hector (307); d., Cowslip (1295); s. of d., Nobleman (95).

CLASS 50.—South Devon Heifer, calved in 1897. [1 entry.]

I. (£10.)—B. TRANT, Tregoad, Sandplace, Cornwall, **Rosa** (2282), born September, 1897; s., Lord Rosebery (409); d., Golden Cup (1851).

CLASS 51.—*South Devon Heifer, calved in 1898.* [6 entries.]

I. (£7).—B. TRANT, Tregoad, Sandplace, **Bella 2nd** (vol. vi., S.D.H.B.), born January 7, 1898; s., Lord Rosebery (409); d., Bella (2668); s. of d., Councillor (163).

II. (£5).—T. B. BOLITHO, M.P., Trewidden, Penzance, **Princess**, born January 28, 1898, bred by J. S. Ford, Hall Torrs, Yealmpton; s., Norman (422); d., Queen (1977).

III. (£2).—T. B. BOLITHO, M.P., **Firefly** (3364), born January 23, 1898; s., County Councillor (570); d., Frusia (2437).

R.—W. BRADBRIDGE, Yeat Farm, Denbury, Newton Abbot, **Primrose** (3377), born September 4, 1898; s., Best Man (556); d., Crocus (2941); s. of d., Nobleman (95).

SHORTHORN.**CLASS 52.—*Shorthorn Bull, calved in 1895 or 1896.* [5 entries.]**

I. (£15) and Champion (£10).*—R. STRATTON, The Duffryn, Newport, Mon., roan, **Alto**, born May 11, 1895; s., Excelsior (65,466); d., Timbrel 5th; s. of d., Roan Seal (43,955).

II. (£10).—J. HANDLEY, Green Head, Milnthorpe, Westmoreland, white, **Prince of the North** (71,256), born September 30, 1895; s., Cock of the North (57,072); d., Princess Dacre; s. of d., Ingram's Swell (57,492).

R. & V. H. C.—J. D. WILLIS, Bapton Manor, Codford, Wilts, white, **Prince of Sanquhar**, born March 3, 1896, bred by A. Law, Mains of Sanquhar, Torres, N.B.; s., Prince of Holl (66,071); d., Joe 2nd; s. of d., Star of Morning.

H. C.—S. W. BENNETT, Wareham, Dorset, roan, **Prince of Roses** (71,249), born January 26, 1896, bred by J. Young, Rothwick, Aberdeenshire; s., Alan Gwynne (66,609); d., Rosetta 2nd (vol. xlii. p. 376); s. of d., Vice Chancellor (56,681).

CLASS 53.—*Shorthorn Bull, calved in 1897.* [11 entries.]

I. (£15).—G. HARRISON, Gainford Hall, Darlington, roan, **Count Beauty** (72,267), born January 15, 1897, bred by W. Duthie, Collynie, Tarves, N.B.; s., Golden Count (68,711); d., Beauty 20th; s. of d., Morton (53,330).

II. (£10).—R. STRATTON, The Duffryn, Newport, Mon., red, **Highflyer**, born June 13, 1897; s., Alto (68,147); d., Excellent; s. of d., Excelsior (65,466).

III. (£5).—G. F. KING, Elm Park Farm, Chewton Keynsham, red, **Viceroy** (73,814), born January 16, 1897, bred by J. D. Willis, Codford, Bath; s., Count Lavender (60,545); d., Victoria 85th; s. of d., Gondolier (52,956).

R. & H. C.—S. HILL, J.P., Langford House, Langford, Bristol, roan, **uck**, born February 19, 1897, bred by R. Stratton; s., Alto (68,147); Fairy Dream; s. of d., Fitz Mowbray.

R. C.—J. HANDLEY, Green Head, Milnthorpe, Westmoreland, white, **mesman**, born September 30, 1897, bred by J. Morton, Skelsmerg Hall, Kendal; s., Mandarin (69,002); d., Heliotrope; s. of d., Baron Bolton 15th (56,859).

* Given by the Shorthorn Society for Best Bull in Classes 52, 53, and 54, entered in or eligible for Coats's Herd Book.

CLASS 54.—Shorthorn Bull, calved in 1898. [16 entries.]

I. (£10) and **B.** for Champion.*—J. D. WILLIS, Bapton Manor, Codford, Its, roan, **Bapton Emperor**, born March 10, 1898, s., Ingram Yet (652); d., Cicely; s. of d., Roan Robin (57,992).

II. (£5.)—J. D. WILLIS, roan **Royal Jeweller**, born March 2, 1898, bred C. W. Brierley, Twyford, Brimfield; s., Royal Secret; d., Jewel 2nd; of d., Rosedal: George.

III. (£2.)—C. F. KING, Elm Park Farm, Chewton Keynsham, white, **Newton Cornelious 2nd**, born April 5, 1898; s., Cornelious (58,405); Countess 25th; s. of d., Blair Athol (60,367).

R. & H. C.—H. T. COOKSON, Sturford Mead, Warminster, roan, **Gustave**, born January 19, 1898; s., Lavender Archer (70,755); d., Gussie (vol. xlv. 378); s. of d., Scottish Canadian (64,804).

H. C.—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, white, **White President**, born January 5, 1898; s., President (67,611); d., ora 2nd; s. of d., Challenge Cup (57,092).

C.—S. HILL, J.P., Langford House, Langford, Bristol, roan, **Langford Lavender**, born January 11, 1898; s., Wiltshire Victor (71,883); d., Lavender Gem; s. of d., Xmas Present.

CLASS 55.—Shorthorn Cow, in-Milk or in-Calf, calved before 1896. [10 entries.]

I. (£15.)—G. HARRISON, Gainford Hall, Darlington, roan, **Welcome**, born September 30, 1895; s., Champion Cup (65,240); d., Warfare; s. of d., 1st Consul (57,314).

II. (£10.)—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, red, **Countess Oxford 14th**, born August 10, 1894; s., Fireball (64,025); d., Countess Oxford 13th; s. of d., Duke of Tregunter 10th (54,224).

III. (£5.)—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, an, **Sittyton Bride**, born January 10, 1895; s., Sittyton Pride (67,939); Flora 2nd; s. of d., Challenge Cup (57,092).

R.—G. F. KING, Elm Park Farm, Chewton Keynsham, roan, **Countess 7th**, born May 16, 1893; s., Blair Athol (60,367); d., Countess 7th; of d., Lord Somerset 10th (48,247).

CLASS 56.—Pure Shorthorn Cow, in-Milk, of any age, eligible for and entered in, Coate's Herd Book (or pedigree sent for such entry before the Show), that had not previously won a First Prize given by the Shorthorn Society in a corresponding Class.

(The First Prize in Class 56 was given by the Shorthorn Society.)

I. (£10.)—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, red, **Countess Oxford 14th**, born August 10, 1894; s., Fireball (64,025); d., Countess Oxford 13th; s. of d., Duke of Tregunter 10th (54,224).

II. (£5.)—G. F. KING, Elm Park Farm, Chewton Keynsham, roan, **Countess 26th**, born May 16, 1893; s., Blair Athol (60,367); d., Countess 7th; s. of d., Lord Somerset 10th (48,247).

Given by the Shorthorn Society for Best Bull in Classes 52, 53, and 54, bred in or eligible for Coate's Herd Book.

CLASS 57.—*Shorthorn Heifer, in-Milk or in-Calf, calved in 1896.*
[6 entries.]

I. (£10.)—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, roan, **Wood Rose 2nd**, born April 27, 1896, bred by M. H. Williams, Pencaster, Truro; s., Bridekirk Roy 2nd (66,730); d., Woodrose; s. of d., Wild Duke of Genera 24th (53,859).

II. (£5.)—D. H. MYTTON, Garth, Welshpool, roan, **Silene**, born May 21, 1896; s., Fairy King (65,479); d., Sybil; s. of d., Nine of Diamonds (61,363).

III. (£2.)—S. HILL, J.P., Langford House, Langford, Bristol, roan, **Evelyn 2nd**, born November 29, 1896, bred by G. F. King, Elm Park Farm, Chewton Keynsham, Bristol; s., Heart of Oak; d., Evelyn; s. of d., Beau Ideal.

R.—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, roan, **Mayflower 4th**, born January 13, 1896; s., President (67,611); d., Mayflower; s. of d., Eastern Star (58,881).

C.—G. F. KING, r.d., **Countess 40th**, born January 3, 1896; s., Vain Knight (66,541); d., Countess 8th; s. of d., Lord Somerset 8th (48,247).

CLASS 58.—*Shorthorn Heifer, calved in 1897.* [8 entries.]

I. (£10.)—J. D. WILLIS, Bapton Manor, Codford, Wilts, roan, **Bapton Pearl**, born April 16, 1897; s., Count Lavender (60,545); d., Primrose 2nd; s. of d., Golden Crown (54,370).

II. (£5.)—J. D. WILLIS, roan, **Bapton Fluff**, born February 18, 1897; s., Count Lavender (60,545); d., Wilts Daisy; s. of d., Rising Star (54,920).

III. (£2.)—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, red, with white socks, **Sittyton Pride**, born January 10, 1897; s., President (67,611); d., Flora 2nd; s. of d., Challenge Cup (57,092).

R. & H. C.—G. HARRISON, Gainford Hall, Darlington, roan, **Fairy Queen**, born January 3, 1897; s., Champion Cup (65,240); d., Fern 7th; s. of d., Donald (52,725).

H. C.—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, red, **Gertrude 16th**, born August 6, 1897; s., Treforrest (63,452); d., Gertrude 14th; s. of d., Oxford Beau 2nd (61,391).

CLASS 59.—*Shorthorn Heifer, calved in 1898.* [9 entries.]

I. (£7.)—J. THORLEY, Ringdale House, Faringdon, roan, **Ringdale Memory 3rd**, born January 23, 1898; s., Viator; d., Ringdale Memory; s. of d., Dictator (63,870).

II. (£5.)—S. HILL, J.P., Langford House, Langford, Bristol, roan, **Groesus**, born February 4, 1898; s., Wiltshire Victor (71,883); d., Pimpernell; s. of d., Rosy Berkley.

III. (£2.)—W. J. HOSKEN, Loggan's Mill, Hayle, Cornwall, red, **Alexandria 15th**, born March 3, 1898; s., Treforrest (63,452); d., Alexandria 12th; s. of d., Knight of Worcester 3rd (46,581).

R.—S. HILL, J.P., red and white, **Lavender Bride**, born February 12, 1898; s., Count Lavender; d., Security; s. of d., Prince Stephen.

H. C.—L. DE ROTHSCHILD, Ascott Home Farm, Leighton Buzzard, red, **Monograph 2nd**, born January 1, 1898; s., Cortez (68,412); d., Monograph; s. of d., Hercules (54,424).

HEREFORD.

CLASS 60.—Hereford Bull, calved in 1895 or 1896. [3 entries.]

I. (£15.)—**EARL OF COVENTRY**, Croome Court, Worcester, **Viscount** (18,648), born January 19, 1895; bred by A. P. Turner, The Leen, Pembridge; s., Statesman (14,938); d., Cordelia (vol. xxiv. 678); s. of d., Lively (7851).

II. (£10.)—**A. E. HILL** and **E. J. LEWIS**, Eggleton Court, Ledbury, **Redigate**, born January 25, 1895; bred by J. H. Arkwright, Hampton Court, Leominster; s., Pearl Cross (16,882); d., Lively 18th; s. of d., Lively (8734).

III. (£5.)—**W. H. DAVIES**, Liver's Ocle, Hereford, **Sir Pearce**, born January 8, 1896; s., Marquis of Arthington (16,846); d., Marion; s. of d., Lively (13,234).

CLASS 61.—Hereford Bull, calved in 1897. [5 entries.]

I. (£15.)—**A. E. HUGHES**, Wintercott, Leominster, **Nonpareil** (19,614), born May 21, 1897; s., Montezuma (18,486); d., Nelly; s. of d., Albion 5,027).

II. (£10.)—**EARL OF COVENTRY**, Croome Court, Worcester, **Miser**, born January 17, 1897; s., Viscount (18,648); d., Miss Minstrel II.; s. of d., Royal Ruler (13,406).

III. (£5.)—**R. EDWARDS**, Strangworth, Pembridge, Herefordshire, **Magnet** (19,573), born March 3, 1897; s., Royal Marquis (18,069); d., Lenten 11; s. of d., Magnet 2nd (16,834).

R. & C.—**EARL OF COVENTRY**, **Miscreant**, born January 26, 1897; s., Viscount (18,648); d., Misdeal II.

CLASS 62.—Hereford Bull, calved in 1898. [6 entries.]

I. (£10.)—**A. E. HUGHES**, Wintercott, Leominster, **Prosperous**, born January 11, 1898; s., Albion (15,027); d., Newtown Plum; s. of d., Lively (6660).

II. (£5.)—**W. TUDGE**, Leinthall, Ludlow, **Goldsmith**, born January 13, 1898; s., Goldbox (15,339); d., Barbara (vol. xxv. p. 622); s. of d., Ancient 11 (15,034).

III. (£2.)—**R. GREEN**, The Whittern, Kington, **Maximilian**, born January 6, 1898; s., Diplomat (18,328); d., Merry Maid; s. of d., Whittern 11 (10,843).

R. & H. C.—**R. GREEN**, **Climax**, born January 16, 1898; s., Lulham 3,234; d., Cedar; s. of d., Pioneer (16,269).

H. C.—**S. H. ARMITAGE**, Upper Newton, Kinnersley, Hereford, **Dumbarton**, born January 18, 1898; bred by Col. R. Bridgeford, C.B., Beech Lawn, Malley Range, Manchester; s., Tip Top (19,130); d., Dorothy; s. of d., Lively (13,656).

CLASS 63.—Hereford Cow, in-Milk or in-Calf, calved before 1896.

[4 entries.]

I. (£15.)—**J. TUDGE**, Duxmoor, Craven Arms, Salop, **Rubella**, born January 26, 1891; s., Hartington (5358); d., Rubella; s. of d., Coral King 2,027).

II. (£10).—R. GREEN, The Whittern, Kington, **Cedar**, born March 31, 1895; s., Pioneer (16,269); d., Cornflower; s. of d., Whittern Grove (10,843).

III. (£5).—J. TUDGE, Rutheen, born July 25, 1890; s., Reginald (14,089); d., Ruthella; s. of d., Coral King (12,027).

CLASS 64.—Hereford Heifer, in-Milk or in-Calf, calved in 1896.
[2 entries.]

I. (£10).—A. E. HUGHES, Wintercott, Leominster, **Wintercott Plum**, born January 29, 1896; s., Albion (15,027); d., Newtown Plum; s. of d., Rudolph (6660).

II. (£5).—R. GREEN, The Whittern, Kington, **Ixia**, born January 29, 1896; s., Gentle Boy (16,074); d., Ivy; s. of d., Druid (5880).

CLASS 65.—Hereford Heifer, calved in 1897. [5 entries.]

I. (£10).—J. TUDGE, Duxmoor, Craven Arms, Salop, **Wilton Star**, born March 11, 1897; s., Forest King (18,364); d., Wilton Lass (vol. xxix. p. 612); s. of d., Lancelot (13,917).

II. (£5).—J. TUDGE, **Lady Duxmoor**, born March 12, 1897; s., Lord Lulham (13,937); d., Rubella; s. of d., Hartington (5358).

III. (£2).—W. H. B. CAVE, Wall End, Monkland, Leominster, **Amethyst**, born April 11, 1897; s., Wicklow Willow 3rd (15,789); d., Lady Henry Croft (vol. xix. p. 250); s. of d., Sir Henry (11,700).

R. & H. C.—A. E. HUGHES, Wintercott, Leominster, **Ladylove**, born January 14, 1897; s., Albion (15,027); d., Lofty 2nd; s. of d., Seabree (14,153).

C.—W. H. DAVIES, Liver's Ocle, Hereford, **Patience**, born March 1, 1897; s., Protector (18,030); d., Petunia (vol. xx. p. 326); s. of d., Gaiety (13,071).

CLASS 66.—Hereford Heifer, calved in 1898. [6 entries.]

I. (£7).—R. GREEN, The Whittern, Kington, **Lady Help**, born February 5, 1898; s., Diplomat (18,328); d., Lady Helen; s. of d., Pioneer (16,269).

II. (£5).—W. TUDGE, Leinthall, Ludlow, **New Year's Gift**, born January 1, 1898; s., King George (18,422); d., Saucebox 4th (vol. xvii. p. 581); s. of d., Ancient Briton (15,034).

III. (£2).—S. H. ARMITAGE, Upper Newton, Kinnersley, Hereford, **Likely**, born February 9, 1898; s., Tip Top (19,130); d., Lena; s. of d., Byron (13,656).

R. & H. C.—T. FENN, Stonebrook House, Ludlow, **Downton Butterfly**, born January 1, 1898; s., Royalist 4th (17,501); d., Downton Bramble (vol. xxi. p. 340); s. of d., Bourton (11,005).

SUSSEX.

CLASS 67.—Sussex Bull, calved in 1895 or 1896. [1 entry.]

I. (£15).—EARL OF DERRY, Birtley, Witley, Surrey, **Merchant** (1485), born June 6, 1896; s., Golden Rex (1303); d., Merry May (5854); s. of d., Billy Boy Blue (1081).

CLASS 68.—Sussex Bull, calved in 1897 or 1898. [2 entries.]

I. (£15.)—EARL OF DERBY, Birtley, Witley, Surrey, **Diploma** (1540), born January 13, 1897; s., Proud Prince (1249); d., Diadem (6178); of d., Gladiator (1171).

II. (£10.)—P. F. R. SAILLARD, Buchan Hill, Crawley, **Prince of Drungewick** (1530), born March 18, 1897, bred by E. E. Braby, Drungewick Manor, Rudgwick, Sussex; s., Noble Johnnie (1360); d., My Queen (5773); of d., Hardy Boy 2nd (686).

CLASS 69.—Sussex Cow or Heifer, in-Milk or in-Calf, calved in or before 1896. [2 entries.]

I. (£15.)—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Elsa 2nd** (732), born January 20, 1892, bred by the late W. B. Waterlow, High Trees, Chhill, Surrey; s., Knight of Woodmancote 3rd (965); d., Elsa (3214); of d., Wallace (478).

II. (£10.)—EARL OF DERBY, Birtley, Witley, Surrey, **Minx** (6501), born May 9, 1894; s., Lord Oxeye of Wantly (1070); d., Mirthful (4691); of d., Buffer (663).

CLASS 70.—Sussex Heifer, calved in 1897. [3 entries.]

I. (£10.)—EARL OF DERBY, Birtley, Witley, Surrey, **Bangle** (7343), born February 4, 1897; s., Golden Rex (1303); d., Broad Bess (5032); s. of d., Hurt Wick (801).

II. (£5.)—Major M. G. BEST, Park House, Boxley, Maidstone, **Boxley Sulflower** (7294), born December 26, 1897; s., Churchill (1373); d., Lumbia (6471); s. of d., Marechal Niel (1180).

III. (£5.)—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Caution** (7301), born February 6, 1897, bred by E. E. Braby, Drungewick Manor, Rudgwick, Sussex; s., Noble Johnnie (1360); d., Clariisa 2nd (4941); s. of d. Lover 149).

CLASS 71.—Sussex Heifer, calved in 1898. [3 entries.]

I. (£7.)—P. F. R. SAILLARD, Buchan Hill, Crawley, Sussex, **Bewbush Marguerite**, born January 2, 1898, bred by G. Warde, Tutsham Hall, Westleigh, Maidstone; s., Goldfinch (1277); d., Crumple 4th (4964); s. of d., Impett.

II. (£5.)—Major BEST, Park House, Boxley, Maidstone, **Boxley Cowslip** (556), born January 3, 1898; s., Churchill (1373); d., Boxley Buttercup 742); s. of d., Marechal Niel (1180).

III. (£5.)—EARL OF DERBY, Birtley, Witley, Surrey, **Gentle Glow-worm** (590), born January 30, 1898; s., Leap Year (1483); d., Glow-worm 773); s. of d., Proud Prince (1249).

JERSEY.

CLASS 72.—Jersey Bull, calved in 1895 or 1896. [5 entries.]

I. (£15.)—J. H. SHORE, Whatley House, near Frome, fawn and white, **Golden King**, born June 2, 1896; s., Boyle (E.J.H.B., 3993); d., Crocus; of d., Evertan Lord (1088, J.H.B.).

II. (£10).—T. L. BROWN, Hallfield, Chard, dark grey, **Battler**, born June 10, 1896, bred by W. Jean, Trinity, Jersey; s., Isinglass; d., Sweet Eyes 2nd (6030); s. of d., Nunthorpe (4648).

R. & H. C.—Mrs. C. McINTOSH, Havering Park, Essex, grey, **King Harden**, born February 22, 1896, bred by P. Varden, St. Martin's, Jersey; s., Eminent (1842); d., Violette (3942); s. of d., Standard (1056).

CLASS 73.—Jersey Bull, calved in 1897. [7 entries.]

I. (£15).—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, black, **Blucher**, born April 14, 1897; s., Spartan (6069); d., Besika; s. of d., Nevada (5302).

II. (£10).—Mrs. C. E. GREENALL, Walton Hall, Warrington, dark brown, **Golden Monarch**, born January 7, 1897, bred by J. Dreland, Trinity, Jersey; s., Golden Lad II. (2023); d., Agenoria 3rd (4125); s. of d., Daisy's Memory (991).

III. (£5).—H. L. B. McCALMONT, M.P., Bishopswood, Ross, whole black, **Chancellor**, born March 28, 1897, bred by R. F. Bolitho, Ponsandane, Penzance; s., Havering Bismarck (5588); d., Tulip 5th (vol. vi. p. 606); s. of d., Spot's Lad (4389).

R. & H. C.—A. GIBBS, Tyntesfield, Bristol, grey, **Skipper**, born April 8, 1897; s., Skipjack (5397); d., Lass of Jersey 2nd (5760, J.H.B.).

CLASS 74.—Jersey Bull, calved in 1898. [19 entries.]

I. (£10).—Mrs. C. McINTOSH, Havering Park, near Romford, Essex, grey, **Havering Pride**, born May 4, 1898; s., Montpellier (5294); d., Ivy Green; s. of d., Viscount (1353, P.S.C.).

II. (£5).—A. GIBBS, Tyntesfield, Bristol, black and grey, **Black Prince**, born June 5, 1898, bred by — Turner, Westbury-on-Trym; s., Duke of Cornwall 2nd; d., Black Be-s 7th.

III. (£2).—H. L. B. McCALMONT, M.P., Bishopswood, Ross, brown, **Golden Spring**, born June 11, 1898, bred by J. D. Richardson, St. Martin's, Jersey; s., Reminder (2419); d., Lynn Daisy (7288).

R. & V. H. C.—J. BRUTTON, 7, Princes Street, Yeovil, dark grey, **Mina's Lad**, born April 26, 1898; s., Golden Lad (5667, E.J.H.B.); d., Mina 2nd; s. of d., Jerome (1960, J.H.B.).

H. C.—Mrs. C. E. GREENALL, Walton Hall, Warrington, dark fawn, **Lord Rioto**, born April 14, 1898; s., Miros (2399); d., Rioto; s. of d., Uncle Peter (2115);—W. B. RODERICK, Fronheulog, Llanelly, South Wales, brown, **Goodig Lad**, born April 16, 1898; Sorel's Boy (6068); d., Golden Drop 2nd (vol. vii. p. 203); s. of d., Golden Stag (5185);—and LORD ROTHSCHILD, Tring Park, Tring, Herts, mulberry, **Geonnais Lad**, born March 11, 1898, bred by T. Vahert, St. Owen's, Jersey; s., Mona's Glory (J.J.H.B., 2404); d., Mantlet's Rosy 2nd (J.J.H.H., 5118).

C.—J. BRUTTON, grey, **Dulce's Jem**, born May 13, 1898; s., Dr. Jim (5861, J.H.B.); d., Dulce; s. of d., Golden Lad (1242, J.H.B.);—Mrs. C. E. GREENALL, fawn, **Golden Rioto**, born April 12, 1898; s., Golden Baron (2067) (5173); d., Rioto (vol. viii. p. 238); s. of d., Nunthorpe (1769);—LORD ROTHSCHILD, dark fawn, **Curfew**, born June 2, 1898; s., Oxford Baronet (Reg. viii. p. 91); d., Clemence 5th (vol. viii. p. 91); s. of d., Cicero (4796);—and J. H. SHORE, Whatley House, near Frome, fawn and white, **Boyle's Glory**, born March 18, 1898; s., Boyle (3993, E.J.H.B.); d., Crocus; s. of d., Everton Lord (1088, J.H.B.).

CLASS 75.—Jersey Cow, in-Milk or in-Calf, calved before 1896.

[23 entries.]

I. (£15).—LORD ROTHSCHILD, Tring Park, Tring, Herts, brown fawn, **herry**, born June 24, 1894, bred by J. C. Le Sueur, Grouville, Jersey; Nunthorpe (4648); d., Cherry Belle (7791, J.H.B.).

II. (£10).—A. GIBBS, Tyntesfield, Bristol, fawn, **Buttercup 3rd**, born April 23, 1892; s., Sir Peter (5394); d., Buttercup; s. of d., Gordon (5190).

III. (£5).—LORD ROTHSCHILD, dark fawn, **Ellen 2nd** (vol. vi. p. 180), born April 20, 1894, bred by J. R. Corbett, More Place, Betchworth; Butterboy (4786); d., Emily K.K. (vol. vi. p. 180); s. of d., Dog Rose (663).

R. & H. C.—Mrs. C. E. GREENALL, Walton Hall, Warrington, fawn, **aisy of the Valley** (vol. vi. p. 147), born February 19, 1890, bred by C. Le Sueur, St. Saviour's, Jersey; s., Count Wolseley (928); d., Beauty Ogden (3563).

H. C.—J. BRUTTON, 7, Princes Street, Yeovil, dark grey, **Mina 2nd**, born April 20, 1895; s., Jerome (1980, J.H.B.); d., Mina (219, E.J.H.B.); of d., Vulcan (3906).—Mrs. C. E. GREENALL, fawn and white, **Lottie 573**, born January 29, 1895, bred by J. C. Ruez, St. Owen's, Jersey; La Chasses Pritce (1927); d., Syren (2596); s. of d., Volunteer (694); of her fawn, **Mabel 23rd** (3213, vol. vii. 215), born February 10, 1888, bred by W. J. Labey, Grouville, Jersey; s., Everton King (390); d., Mabel 3th (1125); s. of d., Guénon's Pink (347).—H. L. B. McCALMONT, M.P., Bishopswood, Ross, whole fawn, **Faux Pas**, born March 21, 1895; Scarpsdale Orange Peel (4702); d., Scarpsdale Florida; s. of d., Marmalade (515).—Mrs. C. McINTOSH, Havering Park, Essex, brown, **La Croix Primrose**, born April 26, 1892, bred by E. H. Nicollès, St. Martins, Jersey; s., Golden Pink (1491); d., Le Douet's Primrose (5782).—and W. B. Roderick, Fronheulog, Llanelly, South Wales, fawn, **Genteel 2nd**, born June 2, 1893, bred by C. J. Starck, Jersey; s., Carno 2nd (5107); d., Genteel (1624, P.S., H.C.); s. of d., Count Cicero (1478).

C.—T. L. BROWN, Hallfield, Chard, fawn, **Lady Rosa**, born April 23, 1893; s., Romeo (4689); d., Queen Rosa; s. of d., Count Wolseley (3119); and W. B. Roderick, fawn, **Surville's Pride**, born July 10, 1891, bred by T. De Gruchy, Jersey; s., Oleander (4955); d., Primrose 6th (3808); of d., Willard 2nd (3918).

CLASS 76.—Jersey Heifer, in-Milk or in-Calf, calved in 1896.

[16 entries.]

I. (£10).—H. L. B. McCALMONT, M.P., Bishopswood, Ross, fawn, **Lottie**, born April 27, 1896, bred by W. G. Renouf, St. Martin's, Jersey; s., Golden Fern's Lad (2160); d., Rivalry (6133).

II. (£5).—LORD ROTHSCHILD, Tring Park, Tring, Herts, brown fawn, **Tulip 7th**, born March 27, 1896; s., Spot's Lad (4389); d., Tulip (vol. v. 723); s. of d., Sultan's Favourite (3841).

III. (£2).—H. L. B. McCALMONT, M.P., whole fawn, **Orange Lily**, born February 20, 1896, bred by M. de la Haye, St. Saviour's, Jersey; s., Cato 2nd (954); d., Orange Peel (3194); s. of d., Golden Nero (729).

R. & H. C.—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, grey and black, **Golden Streak**, born April 23, 1896; s., Golden Fluke (557); d., Sunbeam (vol. vii. p. 232); s. of d., Strawberry (5407).

H. C.—A. GIBBS, Tyntesfield, Bristol, fawn, **Matilda** (vol. viii. p. 33), born January 20, 1896, bred by the late H. J. Cornish, Thornford, Sherborne; s., **Doctor** (5524); d., **Modiste** 6th; s. of d., **Nunthorpe** (4648):—Mrs. C. E. GREENALL, Walton Hall, Warrington, brown, **Longueville Brownie** 4th, born January 30, 1896, bred by P. Arthur, Jersey; s., **Hope** (1948); d., **Longueville Brownie** 2nd (5462); s. of d., **Maggie's Boy** (1571):—and W. B. RODERICK, Fronheulog, Llanelly, South Wales, fawn, **Beech Lass**, born March 2, 1896, bred by J. R. Vautier, Jersey; s., **Robert** (2155); d., **Graphic** (4699).

C.—FOWLER and DE LA PERRELLE, Southampton, brown, **Alva's Maid** 4th (fol. 231, J.H.B.), born September 18, 1896, bred by J. Renouf, Jersey; s., **Ruler** (2081, J.H.B.); d., **Alva's Maid** (3205, J.H.B.).

CLASS 77.—Jersey Heifer, calved in 1897. [21 entries.]

I. (£10.)—Mrs. C. McINTOSH, Havering Park, Essex, fawn, **Havering Carnatie**, born April 21, 1897; s., **Montpellier** (5294); d., **Carnatie** 2nd (vol. viii. p. 192); s. of d., **Rosebay's Lad** (1730).

II. (£5.)—H. L. B. McCALMONT, M.P., Bishopswood, Ross, whole fawn, **Harmony**, born June 23, 1897, bred by J. M. Bannerman, Bishopswood, Ross; s., **Minstrel** (5991); d., **Monitress** (vol. vii. p. 61); s. of d., **Mentor** (4632).

III. (£2.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, fawn, **Queen Mab**, born January 31, 1897, bred by C. G. Marrett, Grouville, Jersey; s., **Golden Lad** 2nd (J.H.B., 2023); d., **The Smew** (J.H.B., 4856).

R. & H. C.—LORD ROTHSCHILD, brown fawn, **Morella**, born February 1, 1897; s., **Actor** (5776); d., **Cherry** (vol. viii. p. 193); s. of d., **Nunthorpe** (4648).

H. C.—P. LE BROCCQ, La Chasse, St. Owen's, Jersey, fawn, **April Dame**, born April 22, 1897, bred by F. Le Feuvre, St. Brelade's, Jersey; s., **Royal Chief** (2161, H.C., J.H.B.); d., **Nelly du Pré** (2873, J.H.B.); s. of d., **Everton Prince** (761, J.H.B.):—W. B. RODERICK, Fronheulog, Llanelly, South Wales, brown, **Goodig Golden Drop**, born May 24, 1897; s. **Goodig Lord** (5907); d., **Golden Drop** 2nd (vol. vii. p. 203); s. of d., **Golden Stag** (5185):—and LORD ROTHSCHILD, light fawn, **Jewel**, born March 29, 1897; s., **Oxford Duke** (5314); d., **Bangle** (vol. viii. p. 182); s. of d., **Skinner** (5396).

C.—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, fawn, **Golden Sheaf**, born May 2, 1897; s., **Spartan** (6069); d., **Golden Butterfly**; s. of d., **Golden Fluke** (4557):—FOWLER and DE LA PERRELLE, Southampton, brown, **Actress** (J.H.B., fol. cclxxxvi.), born March 12, 1897, bred by I. De Vicq, Jersey; s., **Badier's Fair** (2042, J.H.B.); d., **Drama** (7179, J.H.B.):—Mrs. C. E. GREENALL, Walton Hall, Warrington, brown, **Longueville Brownie** 5th, born February 11, 1897, bred by P. Arthur, Jersey; s., **Golden Lad** 2nd (2023); d., **Longueville Brownie** 2nd (5462); s. of d., **Maggie's Boy** (1571):—P. LE BROCCQ, grey fawn, **La Chasse Pearl**, born March 12, 1897; s., **Ravachol** (2032, J.H.B.); d., **Pearl**; s. of d., **Manor King** (1523):—and Mrs. C. McINTOSH, brown, **Havering Primrose**, born June 24, 1897; s., **Montpellier** (5294); d., **La Croix Primrose**; s. of d., **Golden Pink** (1491).

CLASS 78.—Jersey Heifer, calved in 1898. [22 entries.]

(£7.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, slight dark fawn, **Regina's Sultana** 5th, born July 25, 1898; s., **Wigton's Cicero** (5769); s. of d., **Regina's Sultana** 3rd (vol. viii. p. 92); s. of d., **Bayleaf's Boy** (4765).

II. (£5).—J. BRUTTON, 7, Princes Street, Yeovil, brown **Golden Gift**, born August 2, 1898, bred by T. W. Mayo, Yeovil; s., Golden Lad (5567); d., Victress; s. of d., Victor (5048).

III. (£2).—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, fawn, **Beatrice**, born July 1, 1898; s., Bessemer; d., Golden Streak; s. of d., Golden Fluke (4557).

R. & H. C.—H. L. B. McCALMONT, M.P., Bishopswood, Ross, whole, **Florence**, born June 14, 1898; s., Mona's Glory (2404); d., Maitland's Flora; s. of d., Golden Lad (3324).

H. C.—Mrs. C. F. GREENALL, Walton Hall, Warrington, fawn, **Sweet Eyes 2nd**, born April 15, 1898; s., Miron (2399); d., Sweet Eyes (4935, vol. vii. 233); s. of d., Golden Lad (1242):—H. L. B. McCALMONT, M.P., whole, **Roaming Nancy**, born March 28, 1898; s., Rome (6040); d., Grand Daughter's Pat (vol. vii. p. 93); s. of d., Gronfille's Lad (5197):—LORD ROTHSCHILD, fawn, **Emblem**, born July 12, 1898; s., Oxford Duke (5314); d., Edissa's Pet (vol. i. p. 173); s. of d., Wolseley's Pride (2995):—and his grey fawn, **Gaiety**, born June 5, 1898; s., Oxford Duke (5314); d., Gay Lady 2nd (vol. xi. p. 222); s. of d., Hope (5221):—and J. H. SHORE, Whatley House, near Frome, fawn and white, **Beautiful**, born February 24, 1898; s., Boyle (3393, E.J.H.B.); d., Bella; s. of d., Leonora's Laddie.

Special Prize given by Sir James Blyth, Bart.—The Blythwood Challenge Silver Bowl, weighing 25 ounces, for the best Cow or Heifer in-Milk, in any of the Jersey Classes, bred in Great Britain or Ireland, to be awarded by inspection (see Special Conditions 59 in Prize Schedule). [22 entries.]

I.—Mrs. C. MCINTOSH, Havering Park, Essex, fawn, **Havering Carnatie**, born April 21, 1897; s., Montpellier (5294); d., Carnatie 2nd (vol. viii. p. 192); s. of d., Rosebay's Lad (1730).

R.—H. L. B. McCALMONT, M.P., Bishopswood, Ross, whole fawn, **Harmony**, born June 23, 1897, bred by J. M. Bannerman, Bishopswood, Ross; s., Minstrel (5991); d., Monitress (vol. vii. p. 61); s. of d., Mentor (4632).

Special Prize given by His Grace the Duke of Marlborough.—A Challenge Cup, value 25 guineas, for the best Bull, not exceeding eighteen months old, Cow of any age in-Milk or in-Calf, and Heifer her produce in-Milk or in-Calf, in any of the Jersey Classes, the property of one Exhibitor (see Special Conditions 60 in Prize Schedule). [8 entries.]

I.—LORD ROTHSCHILD, Tring Park, Tring, Herts, mulberry Bull, **Geonnais Lad**, born March 11, 1898, bred by T. Babert, St. Owens, Jersey; s., Mona's Glory (J.J.H.B., 2404); d., Mantlets Rosy II. (J.J.H.B. 5118):—his brown fawn Cow, **Cherry**, born June 24, 1894, bred by J. C. Le Sneur, Grouville, Jersey; s., Nunthorpe (4648); d., Cherry Belle (7791, J.H.B.):—and his brown fawn Heifer, **Morello**, born February 1, 1897; s., Actor (5776); d., Cherry (vol. viii. p. 193); s. of d., Nunthorpe (4648).

R.—Mrs. C. MCINTOSH, Havering Park, Essex, fawn Bull, **Adonis**, born April 3, 1899, bred by A. J. Arthur, St. Owens, Jersey; s., Aristocrat (2280, J.H.B.); d., Clementine (5746, J.H.B.); s. of d., Clarence (1494, J.H.B.):—her brown Cow, **La Croix Primrose**, born April 26, 1892, bred by E. H. Nicolles, St. Martin's, Jersey; s., Golden Pink (1491); d., Le Douet's Primrose (5782):—and her brown Heifer, **Havering Primrose**, born June 24, 1897; s., Montpellier (5294); d., La Croix Primrose; s. of d., Golden Pink (1491).

GUERNSEY.**CLASS 79.—Guernsey Bull, calved in 1895 or 1896. [9 entries.]**

I. (£15).—W. A. GLYNN, Seagrove, Sea View, Isle of Wight, orange, fawn and white, **Frolic 6th** (899, E.G.H.B.), born February 28, 1896; s., **Frolic 5th** (612, E.G.H.B.); d., **Favourite 9th** (760, E.G.H.B.).

II. (£10).—LADY TICHBORNE, Tichborne Park, Alresford, orange and fawn, **Dr. Jim** (891), born June 18, 1895, bred by D. de Mouilpied, Ville au Roi, Guernsey; s., **Noble Boy** (822, P.S., R.G.A.S.); d., **Fairy of the Ville au Roi** (1463, P.S., R.G.A.S.).

III. (£5).—H. M. OZANNE, Lilyvale, Castel, Guernsey, red and white, **Massachusetts**, born January 19, 1896, bred by S. Bartlett, St. Peter's Port, Guernsey; d. **Carey 1st** (1989, F.S.).

R. & V. H. C.—H. J. GIBBS, Milford, Salisbury, red and white, **Farmer's Hope** (988, E.G.H.B.), born July 11, 1896, bred by J. A. N. Laine, Les Lohiers, Guernsey; s., **His Majesty** (952, R.G.A.S.); d., **Esperance 6th** of the Lohiers (3248, R.G.A.S.).

V. H. C.—E. A. HAMBRO, Hayes Place, Hayes, Kent, fawn and white, **Amphion**, born August 10, 1895, bred by J. Stephens, Finchley; s., **May Boy**; d., **Muriel**.

H. C.—W. MADDICK, Abbott's Farm, Wonford, Heavitree, yellow and white, **Haye's Starlight**, born April 20, 1896, bred by E. A. Hambro; s., **Magnus 4th**; d., **Vesta** (2481); s. of d., **Our Prince** (424).

CLASS 80.—Guernsey Bull, calved in 1897. [12 entries.]

I. (£15).—J. STEPHENS, Grove House, Finchley, pale red and white, **May Day** (1132, E.G.H.B.), born April 5, 1897, bred by P. Martel, Castel, Guernsey; s., **Loyal of the Hunguets** (978, P.S.); d., **May Rose 2nd** (3251, P.S.).

II. (£10).—W. H. FOWLER, Claremont, Taunton, pale red and white, **Claremont Westward Ho** (1091, E.G.H.B.), born January 14, 1897, bred by T. Mahy, Calais, St. Martin's, Guernsey; s., **Loyal of the Hunguets** (978, P.S.); d., **Lily of Calais** (1604, F.S.); s. of d., **Ajax** (208, P.S.).

III. (£5).—LADY TICHBORNE, Tichborne Park, Alresford, red and white, **Itchen Jewel** (1112), born August 23, 1897, bred by P. D. Ozanne, Les Pelleys, Castel, Guernsey; s., **Loyal of the Hunguets** (978, P.S., R.G.A.S.); d., **France 5th** (3727, P.S., R.G.A.S.).

R. & V. H. C.—A. H. WINGFIELD, Ampthill, fawn and white, **Nebuchadnezzar** (1141, E.G.H.B.), born July 28, 1897, bred by R. A. Prevost, St. Saviour's, Guernsey; s., **Sly of the Bordages** (988, P.S., R.G.A.S.); d., **Butter Queen** (1983, F.S., R.G.A.S.).

V. H. C.—Sir A. A. HOOD, Bart., M.P., St. Audries, Bridgwater, Somerset, fawn and white, **St. Audries Amateur 3rd**, born June 23, 1897; s., **Amateur 2nd** (851, E.G.H.B.; 861, P.S., R.G.A.S.); d., **Beattie 3rd** (3244, E.G.C.H.B.; 4638, G.H.B.); s. of d., **Jolly Boy**:—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **Signalman 2nd**, born February 22, 1897; s., **Signalman** (585); d., **Miranda 6th** (2253):—and A. H. WINGFIELD, red and white, **Pendragon** (1117, E.G.H.B.), born March 18, 1897, bred by J. Le Page, Br.quet, St. Saviour's, Guernsey; s., **His Majesty**, (952, P.S., R.G.A.S.); **Sea Belle 3rd** (3311, P.S., R.G.A.S.).

H. C.—Col. H. W. SHAKERLEY, Burgate, Godalming, Surrey, fawn, **Captain Parry** (971), born January 12, 1897, bred by A. Brehant, Pages, St. Martin's, Guernsey; s., Captain Lyons 1st (1061, P.S., R.G.A.S.); d., Petite 5th (3945, P.S., R.G.A.S.).

CLASS 81.—Guernsey Bull, calved in 1898. [15 entries.]

I. (£10.)—W. A. GLYNN, Seagrove, Sea View, Isle of Wight, orange, fawn and white, **Clio**, born January 3, 1898, bred by R. Alexandre, St. Saviour's, Guernsey; s., Sly of the Bordages; d., Pearl of the Prevosts.

II. (£5.)—W. H. FOWLER, Claremont, Taunton, lemon, fawn and white, **Claremont St. Andrews**, born February 7, 1898, bred by T. Mahy, Calais, St. Martin's, Guernsey; s., Uncle Peter (1021, P.S.); d., Merry Dance (1907, P.S.).

III. (£2.)—A. H. WINGFIELD, Ampthill, fawn and white, **The Chamberlain** (1166, E.G.H.B.), born May 28, 1898; s., Dr. Jim (891, E.G.H.B.); d., Claremont Sweet Nancy (3656, E.G.H.B.); s. of d., Mimic (787, P.S., R.G.A.S.).

R. & V. H. C.—H. J. GIBBS, Milford, Salisbury, fawn and white, **Milford Ensign** (1135, E.G.H.B.), born May 27, 1898; s., Milford Masher (934, E.G.H.B.); d., East Lynne 4th (2131, E.G.H.B.).

V. H. C.—Mrs. H. C. STEPHENS, Avenue House, Finchley, orange and white, **Sirius** (1161), born March 25, 1898; s., Caractacus (870); d., Nora 7th (1685); s. of d., Original (262);—and V. J. A. WILLETT, Apse Manor, Shanklin, Isle of Wight, orange, fawn and white, **Apsie Field Marshal** (1073, E.G.H.B.), born May 6, 1898; s., Captain of the Wight (970, E.G.H.B.); d., Rose des Islets (3160, E.G.H.B.).

H. C.—W. A. GLYNN, orange, fawn and white, **Hopeful 11th** (1108, E.G.H.B.), born June 3, 1898; s., Hopeful 7th (780, E.G.H.B.); d., Jes. 1st 3rd (1903, E.G.H.B.).

CLASS 82.—Guernsey Cow, in-Milk or in-Calf, calved before 1896. [9 entries.]

I. (£15.)—A. H. WINGFIELD, Ampthill, red and white, **Lady Jane of Ampthill**, born April 18, 1888, bred by J. Froome, St. Martin's, Guernsey; s., Rydale (214, G.H.B.); d., Lady Jane 1st.

II. (£10.)—J. STEPHENS, Grove House, Finchley, orange, fawn and white, **Muriel 6th** (2765), born December 14, 1894; s., Express (609); d., Muriel (1132); s. of d., Climax.

III. (£5.)—E. A. HAMBRO, Hayes Place, Kent, fawn and white, **Royal Maid of Sea View Farm**, born April 25, 1895, bred by J. de Garis, Sea View Farm, Castel, Guernsey; s., Royal Blood 1st; d., Little Floe 2nd.

R. & V. H. C.—LADY TICHBORNE, Tichborne Park, Alresford, Hants, fawn and white, **Esperance** (2315, P.S., R.G.A.S.), born August 27, 1889, bred by J. A. N. Laine, Lohiers, St. Saviour's; s., Archibald (442, P.S., R.G.A.S.); d., Esperance of the Lohiers (1372, P.S., R.G.A.S.).

V. H. C.—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **Claremont Flora** (3288), born February, 1892, bred by A. Hansford, Longfields, Guernsey; s., Deputy; d., Starlight;—and A. H. WINGFIELD, fawn, **Claremont Hilda** (2908, E.G.H.B.), born January, 1893, bred by T. Ozanne, Honquille, Castel, Guernsey; s., Pas Mal; d., Dolly Rose (2004, G.H.B.).

CLASS 83.—Guernsey Heifer, in-Milk or in-Calf, calved in 1896.

[9 entries.]

I. (£10).—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Jasmine** (4007, E.G.H.B.), born January 28, 1896, bred by Mrs. M. de Garais Lainé, St. Saviour's, Guernsey; s., Orange Boy (901, P.S.); d., Silvester 5th (2837, P.S.); s. of d., Captain (513, P.S.).

II. (£5).—W. H. FOWLER, fawn and white, **Claremont Sweet Cicely 2nd** (3319, E.G.H.B.), born October 18, 1896; s., King Alfonso 1st (951, P.S.); d., Sweet Cicely (3318, E.G.H.B.).

III. (£2).—H. J. GIBBS, Milford, Salisbury, red and white, **Milford Susie** (3486, E.G.H.B.), born April 15, 1896; s., Lord Moscow (698, E.G.H.B.); d., Salisbury Lotta (1442, E.G.H.B.).

R. & V. H. C.—W. MADDICK, Abbot's Farm, South Wonford, yellow and white, **Miss Evelyn 3rd**, born April 1, 1896; s., Prince Charlie (819, E.G.H.B.); d., Miss Evelyn (1395, E.G.H.B.); s. of d., The Earl.

H. C.—H. J. GIBBS, red and white, **Milford Luxury** (3478, E.G.H.B.), born June 28, 1896; s., Sapling (732, E.G.H.B.); s. of d., Lenten Lily (2489, E.G.H.B.).

CLASS 84.—Guernsey Heifer, calved in 1897. [13 entries.]

I. (£10).—E. A. HAMBRO, Hayes Place, Kent, fawn and white, **Hayes Lily of the Preel**, born April 21, 1897, bred by J. W. Martel, Preel, Castel, Guernsey; s., Loyal of the Hunquets; d., Lily of the Preel 6th.

II. (£5).—H. M. OZANNE, Lilyvale, Castel, Guernsey, red and white, **Anneville-Beauty**, born January 13, 1897, bred by Mr. E. A. Mahy, Anneville Vale, Guernsey; s., Safeguard of the Capelles (914, P.S.).

III. (£2).—W. MADDICK, Abbot's Farm, South Wonford, fawn, **Golden Horn 4th**, born June 20, 1897; s., Necklace (562, E.G.H.B.); d., Wonford Golden Horn (3213).

R. & H. C.—Mrs. MONTEFIORE, Worth Park, Crawley, fawn and white, **Rose of Sharon**, born April 15, 1897, bred by W. Le Page, St. Martin's, Guernsey; s., Billy of the Fosse; d., Daisy of Les Camps.

H. C.—FOWLER and DE LA PERRELLE, Southampton, fawn, **Eolipse** (6081), born February, 1897, bred by N. P. Postevin, Guernsey; s., Mignon d., Red Star.

CLASS 85.—Guernsey Heifer, calved in 1898. [19 entries.]

I. (£7).—LADY TICHBORNE, Tichborne Farm, Alresford, Hants, fawn, white marking all over body, **Royal Rose**, born June 12, 1898; s., Active (653); d., Tea Rose (2336).

II. (£5).—LADY TICHBORNE, red and white, **Itchen Lady** (4111), born March 4, 1898, bred by J. W. Martel, Preel, Castel; s., Loyal of the Hunquets (978, P.S., R.G.A.S.); d., Friquet's Pride (1760, F.S., R.G.A.S.).

III. (£2).—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Amaryllis**, born January 2, 1898, bred by T. Mahy, Calais, St. Martin's, Guernsey; s., Loyal of the Hunquets (978, P.S.); d., Lena of Calais (1886, F.S.).

R. & V. H. C.—H. J. GIBBS, Milford, Salisbury, fawn and white, **Milford Evelyn** (4198, E.G.H.B.), born April 19, 1898; s., Marlborough 2nd (928, E.G.H.B.); d., Echo (2946, E.G.H.B.).

V. H. C.—H. J. GIBBS, fawn and white, **Milford Vivid** (4212, G.H.B.), born February 4, 1898; s., Milford Masher (934, E.G.H.B.); Vivid (2351, E.G.H.B.):—W. A. GLYNN, Seagrove, Sea View, Isle of Wight, orange, fawn and white, **Favourite 23rd** (4054, E.G.H.B.), born June 6, 1899; s., Frolic 5th (899, E.G.H.B.); d., Favourite 19th (2971):—A. HAMBRO, Hayes Place, Kent, fawn and white, **Hayes Richesse**, born May 1, 1898; s., His Majesty; d., Richesse du Chene 2nd:—Mrs. MONTEORE, Worth Park, Crawley, fawn and white, **Wild Violet 2nd**, born March 1, 1898, bred by J. S. Mortion, Horley, Surrey; s., David (889); Wild Violet (2585):—and her fawn and white, **Lily of the ridge**, born April 9, 1898; s., Professor (1036); d., Lilly of the Bridge 4th (36):—H. M. OZANNE, Lilyvale, Castel, Guernsey, fawn, **Olive Tree**, born January 11, 1898, bred by J. Tostevin, St. Peter's, Guernsey; s., Sly the Bordages (988, P.S.):—Mrs. H. C. STEPHENS, Avenue House, Finchley, pale red and white, **Citron Blossom 16th** (4005), born March 25, 1898; s., Caractacus (870); d., Citron Blossom 13th (2898); s. of d., May (346):—J. STEPHENS, Grove House, Finchley, orange, fawn and white, **Amelia of Guernsey 4th** (3988), born May 6, 1898; s., Farmer's Hope (88), d., Camelia of Guernsey 3rd (3258); s. of d., May Boy (346):—and his pale red and white, **Muriel 9th** (4230), born May 10, 1898; Caractacus (870); d., Muriel 6th (2765); s. of d., Express (609):—LADY CHORNE, red and white, **Daisy Chain** (4029), born May 22, 1898; Amphion (753); d., Daisy Pearl (3340):—V. J. A. WILLETT, Apse Manor, Shanklin, Isle of Wight, orange, fawn and white, **Apse Fancy** (963, E.G.H.B.), born April 29, 1898; s., Frolic 5th (612, E.G.H.B.); Bella 4th (2373, E.G.H.B.):—A. H. WINGFIELD, Amptill, fawn and white, **Celia 2nd** (3992, E.G.H.B.), born January 26, 1898; s., Masher 30, E.G.H.B.); d., Celia (2892, E.G.H.B.); s. of d., Noble Boy (303, H.B.):—and W. MADDICK, Abbot's Farm, South Wonford, yellow and white, **Miss Evelyn 6th**, born May 2, 1898; s., Hayes Starlight; d., Miss Evelyn; s. of d., The Earl.

KERRY.

CLASS 86.—Kerry Bull, calved in 1896, 1897, or 1898. [4 entries.]
I. (£7) and Special (£5 5s.).*—ROBERTSON AND SONS, Church Farm, Bramham, Cambridge, black, **La Mancha Jet**, born 1897.
II. (£5).—W. VICARY, The Knoll, Newton Abbot, black, **Stonelands Kidmore King** (398), born July 23, 1896; s., King of Killarney (297, H.B.); d., Kidmore Violet 4th (1950); s. of d., Enda's Glory (199).
R. & H. C.—W. H. MULLENS, Westfield Place, Battle, Sussex, black, **King Tuathal**, born March 2, 1898, bred by C. Marley, Belvedere House, Allingar; s., Belvedere Prince of Leinster (353); d., Bratha (187).
H. C.—W. H. MULLENS, black, **Count Leinster**, born October 29, 1897, sired by C. Marley; s., Belvedere Prince of Leinster (353); d., Belvedere Modil (2221); s. of d., Conor O'Moore (128).

CLASS 87.—Kerry Cow or Heifer, in-Milk or in-Calf, calved in or before 1896. [3 entries.]

I. (£7) and R. for Special.*—ROBERTSON AND SONS, Church Farm, Bramham, Cambridge, black, **Eyvind-an-Treas** (379), born July 5, 1889, sired by P. Mahony, Kilmorna, co. Kerry; s., O'Ruare (29); d., Eyvind-an-Treas (85); s. of d., Aberlour 1st.

* Given by the Kerry and Dexter Cattle Society, for the Best Animal in 1886, 87, or 88.

R. & H. C.—W. H. MULLENS, Westfield Place, Battle, Sussex, black, **La Mancha Vesta**, born 1894.

CLASS 88.—*Kerry Heifer, calved in 1897 or 1898.* [3 entries.]

I. (£7.)—W. H. MULLENS, Westfield Place, Battle, Sussex, black, **Guestling Gloria**, born April 17, 1897, bred by J. E. Butler, Waterville, Kerry.

II. (£5.)—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, black, **La Mancha Edna May**, born 1897.

R. & H. C.—W. VICARY, The Knoll, Newton Abbot, black, **Newton Honeysuckle**, born March 9, 1897; s. Victor Wild (earmark 3206); d. Honeysuckle (earmark 2983).

DEXTER KERRY.

CLASS 89.—*Dexter Kerry Bull, calved in 1896, 1897, or 1898.*
[7 entries.]

I. (£7) and R. for Special.*—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, red, **La Mancha Bashful Boy**, born 1897.

II. (£5.)—W. STALLARD, Sunny Lodge, Malvern Link, black, **Malvern Atom** (354), born November 8, 1897; s. King of the Roses (168); d. La Mancha Love Bird (755).

III. (£2.)—Mrs. LEATHAM, Misarden Park, Cirencester, black, **Caradoc**, born October 13, 1897; s. Druid; d. Oxeye; s. of d., Baron Musar.

R. & H. C.—E. S. WOODIWISS, Upminster, Essex, black, **Squire Jack**, born 1897.

H. C.—Mrs. LEATHAM, black, **Malvern Sweep**, born February 12, 1898, bred by Col. W. Stallard; s. King of the Roses; d. Black Bess.

C.—ROBERTSON AND SONS, red, **La Mancha Prig**, born 1897.

CLASS 90.—*Dexter Kerry, Cow or Heifer, in-Milk or in-Calf, calved in or before 1896.* [6 entries.]

I. (£7) and Special (£5 5s.).*—E. S. WOODIWISS, Upminster, Essex, black, **Sweet Lavender** (937), born 1895.

II. (£5.)—Mrs. E. A. LEATHAM, Misarden Park, Cirencester, black, **Martha**, born 1892.

R. & H. C.—E. S. WOODIWISS, red, **Fairy Queen** (496), born 1892.

H. C.—W. J. FLETCHER, The Chantry, Wimborne, black, **Chantry Girl** (564), born April 6, 1890.

C.—Mrs. E. A. LEATHAM, black, **Nisida**, born 1892.

CLASS 91.—*Dexter Kerry Heifer, calved in 1897 or 1898.* [7 entries.]

I. (£7.)—ROBERTSON AND SONS, Church Farm, Babraham, Cambridge, black, **La Mancha Love Lost**, born 1897.

II. (£5.)—E. S. WOODIWISS, Upminster, Essex, black, **Walf** (1883), born 1897.

* Given by the Kerry and Dexter Cattle Society, for the **Best Animal** in Class 89, 90, or 91.

III. (£2).—W. STALLARD, Sunny Lodge, Malvern Link, black, **Malvern Nile** (1401), born August 23, 1897; s., King of the Roses (168); d., alvern Silence (982); s. of d., Honeybourne (135).

R. & H. C.—E. S. WOODIWISS, black, **Dainty Dish**, born 1897.

H. C.—W. J. FLETCHER, The Chantry, Wimborne, black, little white, **Chantry Eve**, born January 8, 1897; s., Commodore (189, vol. iv. pt. ii.); Chantry Girl (564);—and W. STALLARD, black, **Malvern Signature** (180), born January 10, 1897; s., Granddaddy (200); d., Malvern Signora (80); s. of d., No. 46 Ballyornane Herd (112).

C.—ROBERTSON AND SONS, red, **La Mancha Bright Idea**, born 1897.

DAIRY.

CLASS 92.—*Cow, in-Milk, of any breed or cross, under 900 lbs. live weight, yielding the largest quantity of milk, containing at each of the two competitive milkings, 12·25 per cent. of total solids, of which not less than 3·25 per cent. shall be fat.*

I (£10).—J. BRUTTON, 7, Princess Street, Yeovil, dark grey, **Mina 2nd**, born April 20, 1895; s., Jerome (1980, J.H.B.); d., Mina (219, E.J.H.B.); of d., Vulcan (3906).

CLASS 93.—*Cow, in-Milk, of any breed or cross, 900 lbs. live weight or over, yielding the largest quantity of milk, containing at each of the two competitive milkings, 12·25 per cent. of total solids, of which not less than 3·25 per cent. shall be fat.*

I (£10).—J. F. SPENCER, Hornsey Lane Farm, Highgate, N., roan Shorthorn, **Model Maid**, about 7 years.

II (£8).—LORD ROTHSCHILD, Tring Park, Herts, roan Shorthorn, **Moppy 2nd**, born October 14, 1890, bred by Taylor and Walton, Hall Garth, usgrave, Kirkby Stephen; s., Ingram's Swell (57,492); d., Moppy Gem; of d., Grand Duke (54,388).

III (£2).—J. F. SPENCER, black Kerry, **Babraham Belladonna** (188), born May 14, 1892, bred by C. R. W. Adeane, Babraham, Cambridge; Blackamoore (246); d., Babraham Belle (133).

BUTTER TEST.

The Prizes in Classes 94 and 95 were given by the English Jersey Cattle Society, and Entries in them were subject to any conditions issued by that Society previous to the Tests.)

CLASS 94.—*Cow, of any breed or cross, under 900 lbs. live weight, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I (£10)* and Gold Medal, and Special (£1).†—H. WATNEY, M.D., Ackhold, Pangbourne, fawn Jersey, **Marryatt's Lass**, born November 5,

* Given by the English Jersey Cattle Society for the Best quality of Butter produced by any Jersey Cow awarded a Medal, Prize, or Certificate of Merit in class 94 or 95.

† Given by the English Jersey Cattle Society for the three Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the test.

1893, bred by P. J. Bree, Gronville, Jersey; s., Villo (1438); d., La Sentes Marionette 2nd.

II. (£3) and Bronze Medal.—H. WATNEY, M.D., fawn Jersey, **Sharab**, born December 16, 1896; s., Squibs Lad (5732); d., Sherbert 2nd (vol. vi. p. 548); s. of d., Sugar Maple (5015).

III. (£2).—H. WATNEY, M.D., grey Jersey, **Lady of the Sunny Isles**, born January 20, 1892; s., Just (3419); d., Lady of the Isles 3rd (vol. vi. p. 322); s. of d., Grey of the West (1098).

CLASS 95.—*Cow, of any breed or cross, 900 lbs. live weight and over, obtaining the greatest number of points by the practical test of the separator and churn, judged by the scale of points adopted by the English Jersey Cattle Society.*

I. (£10) and Silver Medal.*—H. WATNEY, M.D., Buckhold, Pangbourne, fawn Jersey, **Sherbet**, born November 22, 1890; s., The Bard (2212); d., Sherry (vol. v. p. 668).

II. (£3).—H. WATNEY, M.D., fawn Jersey, **Sabeau 2nd**, born December 21, 1895; s., Kit (5240); d., Sabeau (vol. vi. p. 535); s. of d., Lord of the Sunny Isles (4243).

III. (£2).—J. F. SPENCER, Hornsey Lane Farm, Highgate, N., roan Shorthorn, **Model Maid**, about 7 years.

CLASS 96.—*Cow or Heifer, entered in the English Guernsey Cattle Society's Herd Book, or eligible for entry therein, obtaining the greatest number of points by the practical Test of the Churn, the points to be reckoned on the weight of Butter and an allowance for lactation to be made under the scale settled by the English Guernsey Society. [5 entries.]*

(Given by the English Guernsey Cattle Society.)

I. (Silver Cup.)—A. H. WINGFIELD, Ampthill, red and white, **Lady Jane of Ampthill**, born April 18, 1888, bred by J. Froome, St. Martin's, Guernsey; s., Rydale (214, G.H.B.); d., Lady Jane 1st.

II. (Silver Medal and £1.)—W. H. FOWLER, Claremont, Taunton, fawn and white, **Claremont Larkspur** (40(8, E.G.H.B.), born September 21, 1895, bred by J. Mowlem & Co., St. Sampson's, Guernsey; s., Safeguard of the Capelles (318, P.S.); d., Daisy.

III. (Bronze Medal and £1.)—J. BRADBEER, Sherford, Taunton, fawn, **Claremont Gertrude** (2907, E.G.H.B.), born March 8, 1893, bred by P. Falla, St. Andrew's, Guernsey; s., Cavalier (700, P.S.); d., Guernsey Maid 2nd.

* Given by the English Jersey Cattle Society for the Best quality of Butter produced by any Jersey Cow awarded a Medal, Prize, or Certificate of Merit in Class 94 or 95.

SHEEP.

COTSWOLD.

CLASS 97.—*Cotswold Shearling Ram.* [5 entries.]

I. (£10.)—W. HOULTON, Broadfield Farm, Northleach, R.S.O., born January, 1898.

II. (£5.)—W. HOULTON, born February, 1898.

R. & H. C.—F. CRADDOCK, Eastington, Northleach, Gloucester, 1 y., n., 2 w.

C.—R. SWANWICK, Royal Agricultural College Farm, Cirencester, born January 6, 1898:—and his born January 17, 1898.

CLASS 98.—*Pair of Cotswold Ram Lambs, dropped in 1899.*

[3 entries.]

I. (£10.)—R. SWANWICK, Royal Agricultural College Farm, Cirencester, under 5 m.

II. (£5.)—R. SWANWICK, under 5 m.

R. & H. C.—F. CRADDOCK, Eastington, Northleach, Gloucester, 3 m., w.

CLASS 99.—*Pen of Three Cotswold Shearling Ewes.* [5 entries.]

I. (£10.)—W. HOULTON, Broadfield Farm, Northleach, R.S.O., born February, 1898.

II. (£5.)—W. HOULTON, born February, 1898.

R. & H. C.—F. CRADDOCK, Eastington, Northleach, Gloucester, 1 y., 3 m.

H. C.—R. SWANWICK, Royal Agricultural College Farm, Cirencester:—vice.

DEVON LONG-WOOLLED.

CLASS 100.—*Devon Long-Woolled Shearling Ram.* [16 entries.]

I. (£10.)—F. WHITE, Torweston, Williton, born February, 1898.

II. (£5.)—R. COOK, Chevithorne, Tiverton, born February, 1898, bred by Cook, Crazlowman, Tiverton.

III. (£2.)—F. WHITE, born February, 1898.

IV. (£1.)—C. G. THORNE, Curdon, Williton, Somerset, born February, 98.

R.—A. C. SKINNER, Pound Farm, Bishop's Lydeard, Somerset, about January 1, 1898.

H. C.—C. PRATT, Tale House, Payhembury, Ottery St. Mary, born March, 98.

C.—W. BRENT, Clampit, Callington, Cornwall, 1 y., 2 m., 1 w.

CLASS 101.—*Pair of Devon Long-Woolled Ram Lambs, dropped in 1899.* [5 entries.]

I. (£10.)—R. COOK, Chevithorne, Tiverton, Devon, born February, 1899.

II. (£5.)—R. COOK, born February, 1899.

R.—A. C. SKINNER, Bishop's Lydeard, Somerset, born about February 1, 1899.

CLASS 102.—*Pen of Three Devon Long-Woolled Shearling Ewes.* [9 entries.]

I. (£10.)—R. COOK, Chevithorne, Tiverton, Devon, born February, 1898.

II. (£5.)—F. WHITE, Torweston, Williton, born February, 1898.

III. (£2.)—C. G. THORNE, Curdon, Williton, Somerset, born February, 1898.

IV. (£1.)—R. COOK, born February, 1898.

R. & H. C.—F. WHITE, born February, 1898.

H. C.—W. BRENT, Clampit, Callington, Cornwall, 1 y., 2 m., 2 w.

CLASS 103.—*Pen of Three Ewes, the property of an Exhibitor who has never shown out of Devon.* [4 entries.]

(Given by Mr. R. Dunsford, Pinhoe, Exeter.)

I. (£5 5s.)—J. BAKER, Taleford Farm, Ottery St. Mary, born February 10, 1898.

R.—C. PRATT, Tale House, Payhembury, born March, 1898.

H. C.—R. FOWLER, Pitt Farm, Chevithorne, Tiverton, 2 years and upwards.

SOUTH DEVON.

CLASS 104.—*South Devon Shearling Ram.* [11 entries.]

I. (£10.)—E. STOOKE, Coleridge, Kingsbridge, Devon, born February, 1898.

II. (£5.)—J. S. HALLETT, Sherford, Brixton, Plymouth, born February 14, 1898.

III. (£2.)—W. F. SOBEY, Trenant, Menheniot, born February 17, 1898.

R. & H. C.—W. F. SOBEY, born February 17, 1898.

C.—J. P. MATTHEWS, Blerrick Antony, Devonport, born March, 1898:—and H. SOBEY, Pensipple, Liskeard, born February 18, 1898.

CLASS 105.—*Pair of South Devon Ram Lambs, dropped in 1899.* [7 entries.]

I. (£10.)—J. S. HALLETT, Sherford Barton, Brixton, Plymouth, born about February 1, 1899.

II. (£5.)—J. S. HALLETT, born 2nd week in February, 1899.

III. (£2.)—H. SOBEY, Pensipple, Liskeard, born February 16, 1899.

R. & H. C.—J. P. MATTHEWS, Blerrick Antony, Devonport, born March 1, 1899.

C.—F. A. SHORT, J.P., Bickham House, Kenn, Exeter, born February 5, 1899.

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CLASS 106.—*Pen of Three South Devon Shearling Ewes.* [5 entries.]

I. (£10.)—E. STOOKE, Coleridge, Kingsbridge, Devon, born February, 1898.

II. (£5.)—F. A. SHORT, J.P., Bickham House, Kenn, Exeter, born March 2, 1898.

R. & C.—G. GRENDON, Lovaton, South Tawnton, 1 y., 3 m.

C.—F. A. SHORT, J.P., born March 2, 1898.

SOUTHDOWN.

CLASS 107.—*Southdown Shearling Ram.* [8 entries.]

I. (£10.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds, born February 15, 1898.

II. (£5.)—EARL BATHURST, Cirencester Park, Gloucester, born about February 20, 1898.

III. (£2.)—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, born February 21, 1898.

R. & H. C.—H. L. B. MCCALMONT, M.P., Cheveley Park, Newmarket, born February 15, 1898.

CLASS 108.—*Pair of Southdown Ram Lambs, dropped in 1899.*

[3 entries.]

I. (£10.)—H. L. B. MCCALMONT, M.P., Cheveley Park, Newmarket, born February 15, 1899.

R. & H. C.—H. L. B. MCCALMONT, M.P., born February 15, 1899.

CLASS 109.—*Pen of Three Southdown Shearling Ewes.* [3 entries.]

I. (£10.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

II. (£5.)—EARL BATHURST, Cirencester Park, Gloucester, born about February 20, 1898.

R. & H. C.—Sir J. BLYTH, Bart., Blythwood, Stansted, Essex, born February 21, 1898.

HAMPSHIRE DOWN.

CLASS 110.—*Hampshire Down Shearling Ram.* [12 entries.]

I. (£10.)—J. FLOWER, Chilmark, Salisbury, born in 1898.

II. (£5.)—LORD ROTHSCHILD, Tring Park, Tring, Herts, born on or about January 10, 1898.

III. (£2.)—J. FLOWER, born in 1898.

R. & H. C.—LORD ROTHSCHILD, born on or about January 10, 1898.

H. C.—J. JOYCE, Milverton, Somerset, born January 25, 1898.

CLASS 111.—*Pair of Hampshire Down Ram Lambs, dropped in 1899.*

[11 entries.]

I. (£10.)—J. FLOWER, Chilmark, Salisbury, 4 m., 1 w.

II. (£5.)—J. JOYCE, Milverton, Somerset, born January 28, 1899.

III. (£2).—H. C. STEPHENS, M.P., Cholderton, Salisbury, born about January 7, 1899.

R. & H. C.—L. H. BAXENDALE, Greenham Lodge, Newbury, Berks, born January 10, 1899.

H. C.—The EARL OF CARNARVON, Highclere Castle, Newbury, born about January 14, 1899:—R. W. HUDSON, Danesfield, Great Marlow, born January 17, 1899:—LORD ROTHSCHILD, born about January 10, 1899:—and W. T. TWIDELL, May's Farm, Crowmarsh, Wallingford, born about January 14, 1899.

CLASS 112.—Pen of Three Hampshire Down Shearling Ewes.
[4 entries.]

I. (£10.)—J. JOYCE, Milverton, Somerset, born end of January, 1898.

II. (£5.)—R. W. HUDSON, Danesfield, Great Marlow, born January 15, 1898, bred by A. de Mornay, Col d'Arbres, Wallingford.

III. (£2.)—H. C. STEPHENS, M.P., Cholderton, Salisbury, born about January 12, 1898.

R. & H. C.—W. T. TWIDELL, May's Farm, Crowmarsh, Wallingford, Berks, born about January 14, 1898.

SHROPSHIRE.

CLASS 113.—Shropshire Shearling Ram. [16 entries.]

I. (£10.)—Mrs. M. BARRS, Odstone Hall, Atherstone, born about the second week in March, 1898.

II. (£5.)—T. FENN, Stonebrook House, Ludlow, born about March 15, 1898.

III. (£2.)—W. F. INGE, Thorpe, Tamworth, born February, 1898.

R.—A. TANNER, Shrawardine, Shrewsbury, born about March 1, 1898.

H. C.—Mrs. M. BARRS, born about the second week in March, 1898:—T. FENN, born about March 15, 1898:—R. P. COOPER, Ashlyns, Berkhamsted, and Shenstone Court, Lichfield, born February 20, 1898:—and his born February 20, 1898:—and G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, born about February 1, 1898.

CLASS 114.—Pair of Shropshire Ram Lambs, dropped in 1899.
[7 entries.]

I. (£10.)—G. L. FOSTER-HARTER, Puckrup Hall, Tewkesbury, born about January 2, 1899.

II. (£5.)—P. L. MILLS, Ruddington Hall, Nottingham.

III. (£2.)—D. GIBSON, The Fields, Harbury, Leamington, born February, 1899.

R.—R. P. COOPER, Ashlyns, Berkhamsted, and Shenstone Court, Lichfield, born February 15, 1899.

H. C.—R. P. COOPER, born February 15, 1899:—and A. TANNER, Shrawardine, Shrewsbury, born March 1, 1899.

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CLASS 115.—Pen of Three Shropshire Shearling Ewes. [10 entries.]

I (£10).—T. FENN, Stonebrook House, Ludlow, born about March 15, 1898.

II (£5).—Mrs. M. BARRS, Odstone Hall, Atherstone, born about March 2, 1898.

III (£2).—P. L. MILLS, Ruddington Hall, Nottingham, born 1898.

R. & H. C.—W. F. INGE, Thorpe, Tamworth, born February, 1898.

H. C.—R. P. COOPER, Ashlyns, Berkhamsted, and Shenstone Court, Lichfield, born March, 1898 :—and his born March 10, 1898 :—and G. L. FOSTER-ARTER, Puckrup Hall, Tewkesbury, born about February 1, 1898.

OXFORD DOWN.

CLASS 116.—Oxford Down Shearling Ram. [5 entries.]

I (£10).—W. A. TREWEEKE, Ryne Hill, Chipping Norton, born February, 1898.

II (£5).—J. T. HOBBS, Maisey Hampton, Fairford, born February, 1898.

R.—W. A. TREWEEKE, born February 28, 1898.

CLASS 117.—Pair of Oxford Down Ram Lambs, dropped in 1899.
[2 entries.]

I (£10).—W. A. TREWEEKE, Ryne Hill, Chipping Norton, born January 3, 1899.

R.—W. A. TREWEEKE, born January 23, 1899.

CLASS 118.—Pen of Three Oxford Down Shearling Ewes.
[2 entries.]

I (£10).—W. A. TREWEEKE, Ryne Hill, Chipping Norton, born end of February, 1898.

SOMERSET AND DORSET HORN.

CLASS 119.—Somerset and Dorset Horn Shearling Ram. [2 entries.]

I (£10).—W. R. FLOWER, West Stafford, Dorchester, Flower's No. 60, born December 3, 1897.

R. & H. C.—W. R. FLOWER, Flower's No. 61, born January 17, 1898.

CLASS 120.—Pair of Somerset and Dorset Horn Ram Lambs, dropped after November 1st, 1898. [2 entries.]

I (£10).—W. R. FLOWER, West Stafford, Dorchester, Flower's Nos. 70 and 71, born December 10, 1898.

R. & H. C.—W. R. FLOWER, Flower's Nos. 67 and 68, born December 3, 1898.

CLASS 121.—Pen of Three Somerset and Dorset Horn Shearling Ewes.
[2 entries.]

I (£10).—W. R. FLOWER, West Stafford, Dorchester, born January 17, 1898.

R. & H. C.—W. R. FLOWER, born January 17, 1898.

EXMOOR.

CLASS 122.—*Exmoor Shearling Ram.* [7 entries.]

- I. (£10.)—C. N. SKINNER, Marsh, Wrafton, North Devon, 1 y., 2 m.
- II. (£5.)—W. LETHBRIDGE, J.P., Wood, South Tawton, Okehampton, born March 2, 1898.
- III. (£2.)—W. LETHBRIDGE, J.P., born February 28, 1898.
- R. & H. C.—D. N. PURCHASE, South Radworthy, North Molton, North Devon, born March 1, 1898.
- H. C.—T. HOWARD, Chittlehampton, near South Molton, 1 y., 2 m.

**CLASS 123.—*Pair of Exmoor Ram Lambs, dropped in 1899.*
[4 entries.]**

- I. (£10.)—C. N. SKINNER, Marsh, Wrafton, North Devon, 2 m., 2 w.
- II. (£5.)—T. HOWARD, Chittlehampton, near South Molton, 3 m.
- R. & H. C.—W. LETHBRIDGE, J.P., Wood, South Tawton, Okehampton, born March 1, 1899.

CLASS 124.—*Pen of Three Exmoor Shearling Ewes.* [6 entries.]

- I. (£10.)—C. N. SKINNER, Marsh, Wrafton, North Devon, 1 y., 2 m.
- II. (£5.)—C. N. SKINNER, 1 y., 2 m.
- III. (£2.)—W. LETHBRIDGE, J.P., Wood, South Tawton, Okehampton, born March 2, 1898.
- R. & H. C.—W. LETHBRIDGE, J.P., born March 2, 1898.
- H. C.—W. COOK, Pitt Farm, North Molton, born March 22, 1898.

DARTMOOR.

CLASS 125.—*Dartmoor Shearling Ram.* [5 entries.]

- I. (£10.)—J. and E. B. YELLAND, Cobham Week, Bridestowe, born March 10, 1898.
- II. (£5.)—E. P. NORTHEY, Higher Bowden, Okehampton, Devon, born March, 1898.
- R.—E. P. NORTHEY, born March, 1898.
- C.—J. and E. B. YELLAND, born March 9, 1898:—and his born March 7, 1898.

**CLASS 126.—*Pair of Dartmoor Ram Lambs, dropped in 1899.*
[5 entries.]**

- I. (£10.)—J. R. T. KINGWELL, Great Aish, South Brent, about 2 m., 1 w.
- II. (£5.)—J. R. T. KINGWELL, about 3 m.
- R.—J. and E. B. YELLAND, Cobham Week, Bridestowe, born February 8, 1899.
- C.—WARD and CHOWEN, Bunville, Tavistock, born March, 1899:—and J. R. T. KINGWELL, about 3 m.

CLASS 127.—Pen of Three Dartmoor Shearling Ewes. [7 entries.]

- I. (£10).—**WARD and CHOWEN, Bunville, Tavistock, born March, 1898.
II. (£5).—J. and E. B. YELLAND, Cobham Week, Bridestowe, born about March 8, 1898.
III. (£2).—WARD and CHOWEN, born March, 1898.
R.—J. and E. B. YELLAND, born about March 8, 1898.
C.—J. R. T. KINGWELL, Great Aish, South Brent, born about March 1, 1898 :—and his born about March 1, 1898 :—and also his born about March 1, 1898.

P I G S.

BERKSHIRE.

CLASS 128.—Berkshire Boar, farrowed in 1896, 1897, or 1898. [12 entries.]

- I. (£7) and R. for Special.*—**T. A. E. HAYTER, The Mount, Whitchurch, Hants, Highclere Topper, born November 13, 1896 ; s., Harpoon (5791) ; d., Highclere Gem 4th (5407) ; s. of d., Bugler (4462).
II. (£3).—J. JEFFERSON, Peel Hall, Chester, Peel Swansea (6231), born May 7, 1896, bred by E. Burbidge, South Wraxall, Bradford-on-Avon ; s., Swansea (3751) ; d., Still-room Maid (5717) ; s. of d., Halle (3626).
III. (£2).—J. P. KING, North Stoke, Wallingford, Oxford Champion, born August 7, 1896, bred by J. A. Caird, Micheldever ; s., Dr. Jameson (5513) ; d., Thistlebank (4647) ; s. of d., Highlander (3040).
R. & H. C.—G. T. TOMKIN, The Moat, Marden, Kent, Peel Victor, born January 5, 1896 ; s., Dr. Jameson ; d., Cat's Eye ; s. of d., Waterloo.
H. C.—J. A. FRICKER, Burton, Mere, Wilts, born July 5, 1898 ; s., Lord F., d., Bright 12th ; s. of d., Highmere.

CLASS 129.—Pair of Berkshire Boars, farrowed in 1899. [8 entries.]

- I. (£5).—**J. A. FRICKER, Burton, Mere, Wilts, born January 2, 1899 ; s., First Catch F. ; d., Bright 12th ; s. of d., Highmere.
II. (£2).—E. BURBIDGE, South Wraxall, Bradford-on-Avon, born January 4, 1899 ; s., Jack of all Trades ; s. of d., Swansea.
III. (£1).—J. LEE, Monro Lodge, Littlewick Green, Maidenhead, Berks, King Harold and Norman King, born January 5, 1899 ; s., Highclere Haymaker ; d., Danesfield Mill Tail (6317) ; s. of d., Lionel (6312).
R. & H. C.—G. T. TOMKIN, The Moat, Marden, Kent, born January 3, 1899 ; s., Marden Julius ; d., Marden Mayblossom ; s. of d., Flordon Bait.
C.—J. D. T. PARSONS, jun., Ashurst Place, Langton, Tunbridge Wells, born April 7, 1899 ; s., Sir Julian (6530) ; d., Ashurst Favourite 3rd (6451) ; s. of d., Duke of Ashurst (6033).

* Given by the British Berkshire Society for the Best Pig in the Berkshire Classes entered in, or eligible for, the Herd Book.

Prizes awarded to Pigs (Large White Breed).

CLASS 130.—*Berkshire Breeding Sow, farrowed before 1899.*

[12 entries.]

I. (£7) and Special (£5).*—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, **May Burton 3rd** (6469), born February 20, 1897, bred by Fricker, Burton, Mere; s., Harold Augustus 2nd (3261); d., **May Burton** (5537); s. of d., Goliath (4454).

II. (£3).—J. JEFFERSON, Peel Hall, Chester, **Peel Daisy** (6695), born June 29, 1897; s., Sir William (5574); d., Peel Perfection (5089); s. of d., Cranborne (4234).

III. (£2).—J. JEFFERSON, **Peel Jessie** (6698), born January 3, 1898; **Peel Surprise** (5884); d., Peel Annie (6232); s. of d., Walton Turk (12).

IV. & V. H. C.—J. A. FRICKER, Burton, Mere, Wilts, **Gillingham B.**, born December 2, 1897; s., First Catch F.; d., Gillingham F.; s. of d., Tapsay Hero.

VI. C.—T. A. E. HAYTER, The Mount, Whitechurch, Hants, **Lotus Lilly**, born April 13, 1898, bred by E. Lywood, Broadgate, Wallop, Hants; s., Windsor; d., Hayter's Exchange; s. of d., Halle;—J. P. KIRK, North Ke, born December 5, 1897; s., Jubilee Star (6294); d., Ruby 87th (93); s. of d., First Lord (4341);—and G. T. TOMKIN, The Moat, Marden, Kent, born January 2, 1898.

CLASS 131.—*Pair of Berkshire Breeding Sows, farrowed in 1899.*

[8 entries.]

I. (£5).—J. A. FRICKER, Burton, Mere, Wilts, born January 2, 1899; s., First Catch F.; d., Torrington F.; s. of d., Tapsay Hero.

II. (£2).—E. BURRIDGE, South Wraxall, Bradford-on-Avon, born January 1899; s., Jack of all Trades; s. of d., Swansea.

III. & C.—J. D. T. PARSONS, jun., Ashurst Place, Langton, Tunbridge Wells, born April 7, 1899; s., Sir Julian (6530); d., Ashurst Favourite 3rd (51).

LARGE WHITE.

CLASS 132.—*Large White Boar, farrowed in 1896, 1897, or 1898.*

[8 entries.]

I. (£7).—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Eclipse 2nd**, born January 14, 1897; s., Walton Eclipse (3621); d., Walton Chess 2nd (6782); s. of d., Walton Captain (3171).

II. (£3).—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Gas**, born July 10, 1897; s., Holywell Ruler (4717); d., Holywell My's Lass 2nd; s. of d., Holywell Dublin.

III. (£2).—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, **Duke of Lancaster 3rd** (4321), born January 18, 1896, bred by P. Ascroft, Ford, Ormskirk; s., Duke of Lancaster (1267); d., Hope 3rd (5852); s. of d., Gamester 5th (3049).

* Given by the British Berkshire Society for the Best Pig in the Berkshire class entered in, or eligible for, the Herd Book.

Prizes awarded to Pigs (Large White Breed). xliii

R.—D. GIBSON, The Field, Harbury, Leamington, **Long Sam 2nd** 376). born January 6, 1896, bred by P. Ascroft, Rufford, Ormskirk, ncs.; s., Long Sam (339); d., Sunbeam 9th (5988); s. of d., Duke of Lancaster 2nd (2653).

C.—F. ALLMAND, Victoria Mill, Wrexham, **Wrexham Jove**, born January 19, 1898; s., Wrexham Dean (4431); d., Wrexham Juno (6846).

CLASS 133.—Pair of Large White Boars, farrowed in 1899.
[7 entries.]

I. (£5).—**A. HISCOCK**, jun., Manor Farm, Motcombe, Dorset, born January 2, 1899; s., Duke of Lancaster 3rd (4321); d., Manor Sweet Bell; s. of d., Candidate (3453).

II. (£2).—**T. MANUELL**, Trevorva, Probus, Cornwall, born January 9, 1899; s., Trevorva Squire (4805); d., Trevorva Lass 5th (7486); s. of d., Crowfield Prince 10th (3859).

III. (£1).—**S. SPENCER**, Holywell Manor, St. Ives, Hunts, born January 1, 1899; s., Holywell Elephant; d., Holywell Amazon; s. of d., Holywell Moulder.

R.—S. SPENCER, born January 7, 1899; s., Holywell Gigas; d., Holywell Prince; s. of d., Holywell Grand.

CLASS 134.—Large White Breeding Sow, farrowed before 1899.
[7 entries.]

I. (£7).—**Sir G. GREENALL**, Bart., Walton Hall, Warrington, **Walton Ruby**, born January 11, 1897; s., Serrator; d., Walton Magenta (6790); s. of d., Metchley King (2321).

II. (£3).—**S. SPENCER**, Holywell Manor, St. Ives, Hunts, **Holywell Model**, born January 17, 1893; s., Holywell Plymouth (1829); d., Holywell Waxwork (2352); s. of d., Holywell King (509).

III. (£2).—**Sir G. GREENALL**, born January 14, 1897; s., Walton Eclipse (3621); d., Walton Duchess 2nd (6782); s. of d., Walton Captain (71).

R.—F. ALLMAND, Victoria Mill, Wrexham, **Wrexham Bessie 2nd** 60), born January 30, 1896; s., Wrexham Scott (4115); d., Wrexham Assie (5310); s. of d., Wrexham Joe (2843).

H. C.—S. SPENCER, **Holywell Amazon**, born January 2, 1897; s., Holywell Moulder; d., Holywell Doty 2nd; s. of d., Holywell Ranger.

CLASS 135.—Pair of Large White Breeding Sows, farrowed in 1899.
[6 entries.]

I. (£5).—**S. SPENCER**, Holywell Manor, St. Ives, Hunts, born January 10, 1899; s., Holywell Dismal Jimmy; d., Holywell Star; s. of d., Holywell Blind.

II. (£2).—**Sir G. GREENALL**, Bart., Walton Hall, Warrington, born January 14, 1899; s., Walton Turk; d., Sunflower 6th (8222); s. of d., Long Sam (339).

III. (£1).—**A. HISCOCK**, jun., Manor Farm, Motcombe, born January 2, 1899; s., Duke of Lancaster 3rd (4321); d., Manor Sweet Bell; s. of d., Candidate (3453).

xliv *Prizes awarded to Pigs (Middle White Breed).*

R. & H. C.—T. MANUELL, Trevorva, Probua, Cornwall, born January 9, 1899; s., Trevorva Squire (4805); d., Trevorva Lass 5th (7486); s. of d., Borrowfield Prince 10th (3859).

MIDDLE WHITE BREED.

CLASS 136.—*Middle White Boar, farrowed in 1896, 1897, or 1898.*
[8 entries.]

I. (£7.)—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Rosy Boy**, born April 28, 1897; s., Holywell Count; d., Holywell Moss Rosy; s. of d., Holywell Baron 2nd.

II. (£3.)—A. C. TWENTYMAN, Castlecroft, near Wolverhampton, **Castlecroft Quicklime**, born July 25, 1897; s., Quicksilver (1535); d., Castlecroft Lady Leicester (7590); s. of d., Morden Pure Gold (3253).

CLASS 137.—*Pair of Middle White Boars, farrowed in 1899.*
[5 entries.]

I. (£5.)—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 10, 1899; s., Holywell Stumpy Tail; d., Holywell Rosy Girl; s. of d., Holywell Count.

II. (£2.)—S. SPENCER, born January 21, 1899; s., Holywell John Bull; d., Holywell Victrix; s. of d., Holywell Count.

III. (£1.)—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, born January 1, 1899; s., Rufus 5th (3689); d., Lady Hesketh (6684); s. of d., Badger (2845).

R.—A. C. TWENTYMAN, Castlecroft, near Wolverhampton, born January 22, 1899; s., Holywell (4468); d., Castlecroft Daffodil (6874); s. of d., Castlecroft Robin Hood (3651).

CLASS 138.—*Middle White Breeding Sow, farrowed before 1899.*
[6 entries.]

I. (£7.)—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Bridesmaid**, born July 26, 1897; s., Walton Editor (4499); d., Walton Mayflower 2nd (6126); s. of d., Badger (2845).

II. (£3.)—A. C. TWENTYMAN, Castlecroft, near Wolverhampton, **Castlecroft Trilby** (6880), born May 31, 1895; s., Castlecroft Robin Hood; d., Castlecroft Daisy Bell; s. of d., Bruce (2451).

III. (£2.)—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, born January 2, 1898; s., Coleshill Metchley (4461); d., Coleshill Girl (7596).

R. & H. C.—S. SPENCER, Holywell Manor, St. Ives, Hunts, **Holywell Hourl**, born February 7, 1897; ; s., Holywell Stumpy Tail; d., Holywell Sultana; s. of d., Holywell Fez.

H. C.—S. SPENCER, **Holywell Flower**, born January 4, 1898; s., Holywell Count; d., Holywell Violet; s. of d., Holywell Curly Boy.

CLASS 139.—*Pair of Middle White Breeding Sows, farrowed in 1899.*
[4 entries.]

I. (£5.)—S. SPENCER, Holywell Manor, St. Ives, Hunts, born January 10, 1899; s., Holywell Stumpy Tail; d., Holywell Rosy Girl; s. of d., Holywell Count.

Prizes awarded to Pigs (Small White or Small Black). xlv

II. (£2).—A. HISCOCK, jun., Manor Farm, Motcombe, born January 1, 1899; s., Rufus 5th (3689); d., Lady Hesketh (6684); s. of d., Badger (2845).

R.—A. C. TWENTYMAN, Castlecroft, near Wolverhampton, born January 22, 1899; s., Holywell (4465); d., Castlecroft Daffodil (6874); s. of d., Castlecroft Robin Hood (3651).

SMALL WHITE OR SMALL BLACK BREED.

CLASS 140.—*Small White or Small Black Boar, farrowed in 1896, 1897, or 1898.* [4 entries.]

I. (£7).—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, born January 1, 1898; s., Coleshill Edward (4509); d., Coleshill Empress (5444).

II. (£3).—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Robin**, born March 25, 1898, bred by Lord Amherst of Hackney, Didlington Hall, Brandon, Norfolk; s., Christopher (3701); d., Susie (7704); s. of d., Coleshill Chancellor (3265).

R. & H. C.—Hon. D. P. BOUVERIE, born January 2, 1897; s., Coleshill Dick (4505); d., Coleshill Princess (6942).

CLASS 141.—*Pair of Small White or Small Black Boars, farrowed in 1899.* [2 entries.]

I. (£5).—Hon. D. P. BOUVERIE, Coleshill House, Highworth, Wilts, born January 3, 1899; s., Coleshill Dick (4505); d., Coleshill Sarah (4206).

R.—Hon. D. P. BOUVERIE, born January 3, 1899; s., Coleshill Dick (4505); d., Coleshill Sarah (4206).

CLASS 142.—*Small White or Small Black Breeding Sow, farrowed before 1899.* [6 entries.]

I. (£7.)*—Hon. D. P. BOUVERIE, Coleshill House, Highworth, born March 1, 1898; s., Coleshill Dick (4504); d., Coleshill Sensation (6154).

II. (£3).—Hon. D. P. BOUVERIE, born January 1, 1898; s., Coleshill Edward (4509); d., Coleshill Empress (5444).

III. (£2).—A. HISCOCK, jun., Manor Farm, Motcombe, Dorset, **Metchley Fairy** (7694), born January 18, 1896, bred by D. Gibson, Harbury, Leamington; s., Metchley Tom Thumb (3273); d., Metchley Royal (5466); s. of d., Prescott Toy (2099).

R. & H. C.—Sir G. GREENALL, Bart., Walton Hall, Warrington, **Walton Tiny 3rd**, born February 12, 1897; s., Temple Champion (4179); d., Walton Tiny (7706); s. of d., Prescott (2897).

H. C.—Sir G. GREENALL, Bart., **Walton Tiny 2nd**, born February 12, 1897; s., Temple Champion (4179); d., Walton Tiny (7706); s. of d., Prescott (2897).

CLASS 143.—*Pair of Small White or Small Black Breeding Sows, farrowed in 1899.* [3 entries.]

I. (£5).—Hon. D. P. BOUVERIE, Coleshill House, Highworth, born January 3, 1899; s., Coleshill Dick (4505); d., Coleshill Sarah (4206).

* This animal afterwards failed to qualify.

II. (£2).—A. HISCOCK, jun., Manor Farm, Motcombe, born January 4, 1899; s., Small Boy; d., Manor Pretty Girl; s. of d., Metchley Tom Thumb (3273).

R.—Hon. D. P. BOUVERIE, born January 3, 1899; s., Coleshill Dick (4505); d., Coleshill Sarah (4206).

TAMWORTH.

CLASS 144.—*Tamworth Boar, farrowed in 1896, 1897, or 1898.* [4 entries.]

I. (£7).—D. W. PHILIP, The Ashes, Whitacre, Birmingham, **Whitacre Welshman**, born August 10, 1897, bred by Colonel Herbert, Llanarth Court, Raglan, Monmouthshire; s., Whitacre General (4259); d., Bella (4856); s. of d., Whitacre Prince (2587).

II. (£3).—A. J. YOUNG, Rockville, Bleadon, Weston-super-Mare, born February, 1897, bred by — Phillipson.

R.—R. IBBOTSON, Knowle, Warwickshire, born November 5, 1898; s., Knowle King (4945); d., Knowle Belle (7752); s. of d., Knowle Monarch.

CLASS 145.—*Pair of Tamworth Boars, farrowed in 1899.* [4 entries.]

I. (£5).—D. W. PHILIP, The Ashes, Whitacre, Birmingham, born January 1, 1899; s., Whitacre Welshman; d., Whitacre Favourite 2nd; s. of d., Cliff Crystal.

II. (£2).—R. IBBOTSON, Knowle, Warwickshire, born January 5, 1899; s., Knowle King (4945); d., Knowle Pansy (7764); s. of d., Knowle Monarch.

R. & H. C.—R. IBBOTSON, born January 18, 1899; s., Knowle King; d., Knowle Gem; s. of d., Knowle Monarch.

CLASS 146.—*Tamworth Breeding Sow, farrowed before 1899.* [6 entries.]

I. (£7).—D. W. PHILIP, The Ashes, Whitacre, Birmingham, **Whitacre Beauty** (8526), born July 10, 1897; s., Warwickshire Monarch (4597); d., Whitacre Countess 2nd (7828); s. of d., Whitacre Chief (3837).

II. (£3).—R. IBBOTSON, Knowle, Warwickshire, **Warwickshire Lady**, born May 12, 1894, bred by T. Watson, Whitacre Hall, Coleshill; s., Whitacre Goldfinder; d., Warwickshire Jewell; s. of d., Gun Hill Prince.

III. (£2).—R. IBBOTSON, **Knowle Royal Queen**, born January 12, 1898; s., Knowle King (4945); d., Knowle Mayflower (7094); s. of d., Knowle Major.

R. & H. C.—E. DE HAMEL, Middleton Hall, Tamworth, born March 12, 1897; s., Middleton Martin; d., Middleton Mignon; s. of d., Middleton Monad.

H. C.—D. W. PHILIP, **Grand Duchess** (3744), born December 9, 1889, bred by A. Ibbotson, Elmdon, Birmingham; s., Gun Hill Prince (1591); d., Gun Hill Duchess (2814); s. of d., Curly (633).

CLASS 147.—Pair of Tamworth Breeding Sows, farrowed in 1899.

[4 entries.]

I. (£5.)—D. W. PHILIP, The Ashes, Whitacre, Birmingham, born January 3, 1899; s., Whitacre Welshman; d., Whitacre Countess 4th; s. of d., Cliff Crystal.

II. (£2.)—R. IBBOTSON, Knowle, Warwickshire, born January 5, 1899; s., Knowle King (4945); d., Knowle Pansy (7764); s. of d., Knowle Monarch.

R. & H. C.—R. IBBOTSON, born January 18, 1899; s., Knowle King (4945); d., Knowle Gem (7760); s. of d., Knowle Monarch.

PRODUCE.

PRIZES FOR CIDER.

(Open to Growers or Makers.)

First Prize in each Class, a Silver Medal and a Certificate; Second Prize in each Class, a Bronze Medal and a Certificate.

Champion Prize, for Best Exhibit in any of the Classes, a Gold Medal and a Certificate.

(The Cider must have been made in 1898, and each Exhibit in Cask consisted of not less than 18 gallons.)

Cider made in Devon.

CLASS 148.—Cask of Cider, containing not less than 4 per cent. of Alcohol. [8 entries.]

I.—J. MORTIMER, The Parks, Crediton.

II.—G. M. LEE, Elbury, Broadclyst.

R.—Sir J. H. H. AMORY, Bart., Estate Office, Leat Street, Tiverton.

CLASS 149.—12 Bottles of Cider, containing not less than 4 per cent. of Alcohol. [5 entries.]

I.—E. PALMER, West Clyst, Exeter.

II.—W. H. BATTING, Cider Stores, St. Cyres, Exeter.

CLASS 150.—Cask of Cider, containing less than 4 per cent. of Alcohol. [4 entries.]

I.—Sir J. H. H. AMORY, Bart., Estate Office, Leat Street, Tiverton.

II.—C. HAYDON, Chettiscombe, Tiverton.

CLASS 151.—12 Bottles of Cider, containing less than 4 per cent. of Alcohol. [3 entries.]

I.—C. HAYDON, Chettiscombe, Tiverton.

II.—BOWDEN AND COOMBE, LIMITED, Blue Ball, Totnes.

H. C.—W. K. WYATT, Eastholme, Newton St. Cyres.

Cider made in Herefordshire.

CLASS 152.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]

[No AWARD.]

CLASS 153.—*12 Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [1 entry.]

[No AWARD.]

CLASS 154.—*Cask of Cider, containing less than 4 per cent. of Alcohol.* [2 entries.]

I.—J. BAZLEY, The Bury, Stoke Prior, Leominster.

CLASS 155.—*12 Bottles of Cider, containing less than 4 per cent. of Alcohol.* [2 entries.]

[No AWARD.]

Cider made in Somerset.

CLASS 156.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [11 entries.]

I.—W. T. S. TILLEY, East Compton, Shepton Mallet.

II.—D. J. CROFTS AND SON, Sutton Montis, Sparkford, Bath.

V. H. C.—D. J. CROFTS AND SON :—and WATERMAN AND SON, Baltonsborough, Glastonbury.

H. C.—W. T. ALLEN, Bradley House, West Bradley, Glastonbury.

Class commended.

CLASS 157.—*12 Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [10 entries.]

I. and Champion.—W. T. S. TILLEY, East Compton, Shepton Mallet.

II.—D. J. CROFTS AND SON, Sutton Montis, Sparkford, Bath.

R. & V. H. C.—WATERMAN AND SON, Baltonsborough, Glastonbury.

V. H. C.—D. J. CROFTS AND SON.

H. C.—H. J. DAVIS, Hurlingpot, Doultling, Shepton Mallet.

Class commended.

CLASS 158.—*Cask of Cider, containing less than 4 per cent. of Alcohol.* [6 entries.]

I.—W. T. S. TILLEY, East Compton, Shepton Mallet.

II.—C. OSBORN, Woolston, North Cadbury, Bath.

H. C.—H. TUCKER, Sutton Montis, Sharkford.

CLASS 159.—12 *Bottles of Cider, containing less than 4 per cent. of Alcohol.* [6 entries.]

I.—W. T. S. TILLEY, East Compton, Shepton Mallet.

II.—H. J. DAVIS, Hurlingpot, Doulting, Shepton Mallet.

H. C.—H. TUCKER, Sutton Montis, Sparkford.

Cider made in Counties other than Devon, Hereford, or Somerset.

CLASS 160.—*Cask of Cider, containing not less than 4 per cent. of Alcohol.* [2 entries.]

I.—R. ROUT AND SON, Banham, Attleborough, Norfolk.

CLASS 161.—12 *Bottles of Cider, containing not less than 4 per cent. of Alcohol.* [3 entries.]

[No AWARD.]

CLASS 162.—*Cask of Cider, containing less than 4 per cent. of Alcohol.*

[1 entry.]

[No AWARD.]

CLASS 163.—12 *Bottles of Cider, containing less than 4 per cent. of Alcohol.* [5 entries.]

II.—J. SLATTER AND Co., Paxford, Campden, S.O., Worcester.

CHEESE.

CLASS 164.—*Three Cheeses (not less than 56 lbs. each) made in 1898.* [12 entries.]

I. (£15).—W. FRANCIS, Redlynch Park, Bruton.

II. (£10).—F. W. J. CROCKER, Redford Farm, Batcombe, Cattistock, Dorset.

III. (£5).—H. CANNON, Milton Clevedon, Evercreech, Bath.

R. & H. C.—C. COLLINS, Longhouse Farm, Orchardleigh, Frome.

CLASS 165.—*Three Cheddar Cheeses (not less than 28 lbs. each) made in 1899 by a Student who had received not less than a week's instruction in one of the Society's Cheese Schools.* [6 entries.]

I. (£8).—Miss M. PARFITT, Spargrove House, Evercreech, Bath.

II. (£5).—Mrs. W. W. KEEL, Stanton Drew, Bristol.

III. (£3).—Miss L. MILLARD, Great House, Theale, Wexmore.

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CLASS 166.—*Three Cheeses (not less than 28 lbs. each) made in 1899.*
[18 entries.]

- I. (£8.)—H. CANNON, Milton Clevedon, Evercreech, Bath.
- II. (£5.)—Mrs. R. A. PERRY, Row Farm, Laverton, Bath.
- III. (£3.)—H. H. PICKFORD, Stanton St. Bernard, Pewsey.
- IV. (£2.)—T. C. CANDY, Woolcombe, Cattistock, Dorset.
- R. & H. C.—Mrs. W. T. S. TILLEY, East Compton, Shepton Mallet.
- C.—J. BEER, Stoford Court, Yeovil:—T. L. JACKSON, Frith Farm, Wincanton, Somerset:—and Miss A. SAGE, Batcombe, Evercreech.

CLASS 167.—*Three Cheddar Cheeses (not less than 28 lbs. each) made in 1899 by a Student who has received not less than a week's instruction in one of the Society's Cheese Schools.* [7 entries.]

- I. (£6.)—Mrs. R. A. PERRY, Row Farm, Laverton, Bath.
- II. (£4.)—Mrs. W. T. S. TILLEY, East Compton, Shepton Mallet.
- III. (£2.)—Miss A. SAGE, Batcombe, Evercreech.

CLASS 168.—*Eight Loaf or other Truckle Cheeses made in 1899.*
[13 entries.]

- I. (£5.)—C. CANDY, Temple House Farm, Doultling, Shepton Mallet.
- II. (£3.)—H. E. TUCKER, Church Farm, Steeple Ashton, Trowbridge.
- III. (£2.)—N. J. SIMS, Pitcombe Farm, Bruton, Somerset.
- H. C.—E. M. COLES, Emborough Farm, near Bath.
- C.—T. C. CANDY, Woolcombe, Cattistock, Dorset:—and W. J. SELWAY, Manor Farm, West Cranmore, Shepton Mallet.

CLASS 169.—*Three Caerphilly Cheeses made in 1899.* [5 entries.]

- I. (£3.)—J. BOARD, Home Farm, East Pennard, Shepton Mallet.
- II. (£2.)—Mrs. W. T. S. TILLEY, East Compton, Shepton Mallet.

CLASS 170.—*Three Cream or other Soft Cheeses.* [8 entries.]

- I. (£3.)—Miss M. G. PRIDEAUX, Motcombe, Dorset.
- II. (£2.)—Mrs. C. MCINTOSH, Havering Park, near Romford, Essex.
- III. (£1.)—Mrs. F. C. LOXTON, The Creamery, Bath.

BUTTER AND CREAM.

(These Classes were not open to Professional Teachers.)

CLASS 171.—3 lbs. of *Fresh (or very slightly salted) Butter, made of Cream from Cows other than Channel Island Breeds.* [26 entries.]

I. (£4.)—LORD POLTIMORE, Poltimore Park, Exeter.

II. (£3.) and Special (£1).*—Mrs. J. CHANNON, Wishford, Broadclyst.

III. (£2.)—A. GIBBS, Tyntesfield, Bristol.

IV. (£1.)—Mrs. F. WYLES, Bassingfield, Nottingham.

R. & V. H. C.—Mrs. J. PYM, Whatley Farm, Winsham, Chard.

H. C.—Mrs. E. A. DURMAN, Vicarage Farm, Hockworthy, Wellington, Somerset:—HON. A. HOLLAND-HIBBERT, Munden, Watford, Herts:—Miss P. JOCK, Lovacott, Newton Tracey, near Barnstaple:—and Miss M. G. BRIDEAUX, Motcombe, Dorset.

C.—Miss A. PRIEST, Week Farm, Thornbury, Brandiscorner:—H. STANDFIELD, Hewish, Milborne, Blandford:—E. TRUMP, Courtneys, Clyst Hydon, Exeter:—and Miss L. WALKER, Whitlocks End, *via* Dymock.

CLASS 172.—3 lbs. of *Fresh (or very slightly salted) Butter, made of Cream from Cows of Channel Island Breeds only.* [18 entries.]

I. (£4.)—J. B. FORTESCUE, Boconnor, Lostwithiel, Cornwall.

II. (£3.)—LORD POLTIMORE, Poltimore Park, Exeter.

III. (£2.)—Mrs. C. G. KNIGHT, Marnhull Rectory, Sturminster Newton, Dorset.

IV. (£1.)—Mrs. C. MCINTOSH, Havering Park, Romford, Essex.

R. & V. H. C.—Mrs. SMITH NEILL, Wendover Lodge, Wendover, Bucks.

H. C.—LORD ROTHSCHILD, Tring Park, Herts:—and Mrs. J. TRUMP, Ordton House, Whimple, Exeter.

C.—A. GIBBS, Tyntesfield, Bristol:—Mrs. J. H. PHILLIPS, Winsford Dairy, Bideford:—and Miss Wyles, Bassingfield, Nottingham.

CLASS 173.—3 lbs. of *Fresh (or very slightly salted) Butter, made from Scalded Cream.* [31 entries.]

I. (£4.) and Special (£1).*—WARD AND CHOWEN, Burnville, Tavistock.

II. (£3.)—LORD POLTIMORE, Poltimore Park, Exeter.

III. (£2.)—LORD ROTHSCHILD, Tring Park, Herts.

IV. (£1.)—A. GIBBS, Tyntesfield, Bristol.

R. & V. H. C.—J. B. FORTESCUE, Boconnor, Lostwithiel, Cornwall.

H. C.—Mrs. E. A. DURMAN, Vicarage Farm, Hockworthy, Wellington, Somerset:—Mrs. C. MCINTOSH, Havering Park, Romford, Essex:—A. F. OMERVILLE, Home Dairy Farm, Dinder, Wells:—and Hon. Mrs. TREFUSIS, Cockbeare Grange, Exeter.

* Three Special Prizes of £1 each were given for Butter, which had the best keeping qualities, exhibited in Class 171, 172, 173, or 174. 1 lb. was taken on the first day of the Show from each Prize Lot of Butter in the Classes named, and was judged on the last day of the Show.

C.—Miss R. M. ARCHER, Rock House, Halberton, near Tiverton :—and
C. E. KEYSER, Aldermaston Court, Reading.

CLASS 174.—3 lbs. of Butter, to which no salt whatever has been added.
[31 entries.]

I. (£4.)—LORD ROTHSCHILD, Tring Park, Herts.

II. (£3.)—LORD POLTIMORE, Poltimore Park, Exeter.

III. (£2) and Special (£1).*—J. B. FORTESCUE, Boconnor, Lostwithiel,
Cornwall.

IV. (£1.)—Mrs. C. McINTOSH, Havering Park, Romford, Essex.

R. & V. H. C.—A. GIBBS, Tyntesfield, Bristol.

H. C.—Miss P. JOCE, Lovacott, Newton Tracey, near Barnstaple :—
W. F. MERRY, Abchurch, Broadcliff :—Mrs. SMITH NEILL, Wendover Lodge,
Wendover, Bucks :—Mrs. J. H. PHILLIPS, Winsford Dairy, Bideford :—
W. B. RODERICK, Fronhenlog, Llanelly :—E. TRUMP, Courtneys, Clyn
Hydon, Exeter :—and Miss WYLES, Bassingfield, Nottingham.

C.—Miss A. PRIEST, Week Farm, Thornbury, Brandi-corner :—Mr.
J. PYM, Whatley Farm, Winsham, Chard :—and A. F. SOMERVILLE, Home
Dairy Farm, Dinder, Wells.

**CLASS 175.—12 lbs. of Salted Butter, in a jar or crock, delivered to the
Secretary four weeks before the Show.** [15 entries.]

I. (£4.)—Mrs. J. CHANNON, Wishford, Broadclyst.

II. (£3.)—A. F. SOMERVILLE, Home Dairy Farm, Dinder, Wells.

III. (£2.)—C. HAYES, Keyford House Farm, Frome.

IV. (£1.)—M. J. WILLIAMS, Regilbury Court, Winford, Bristol.

R. & V. H. C.—E. TRUMP, Courtneys, Clyn Hydon, Exeter.

H. C.—A. GIBBS, Tyntesfield, Bristol.

CLASS 176.—Four half-pounds of Clotted or Devonshire Cream.
[17 entries.]

I. (£3.)—Mrs. J. TRUMP, Fordton House, Whimple, Exeter.

II. (£2.)—WARD AND CHOWEN, Burnville, Tavistock.

III. (£1.)—G. MORRISH, The Dairy, Cullompton.

IV. (10s.)—LORD POLTIMORE, Poltimore Park, Exeter.

R. & V. H. C.—Mrs. J. H. PHILLIPS, Winsford Dairy, Bideford.

H. C.—ADAMS BROS., Polloe Dairy, Northernhay Place, Exeter :—
W. LEVERTON, Wolleigh, Beaford, North Devon :—A. F. SOMERVILLE,
Home Dairy Farm, Dinder, Wells :—and Hon. Mrs. TREFUSIS, Rockbeare
Grange, Exeter.

* Three Special Prizes of £1 each were given for Butter, which had the best
keeping qualities, exhibited in Class 171, 172, 173, or 174. 1 lb. was taken
on the first day of the Show from each Prize Lot of Butter in the Classes named
and was judged on the last day of the Show.

BUTTER-MAKING COMPETITIONS.

onal Teachers, Makers or Vendors of Churns, or persons in any way ing the interests of Makers or Vendors of Churns, were not eligible in the Butter-making Classes. This Regulation was strictly enforced. ous winner of the Society's Champion Gold Medal was not eligible to any of the Butter-making Classes.

izes were awarded for the Best and Largest quantity of Butter made given quantity of Cream in the cleanest and most approved method.)

7.—*On the first day of the Show, open to any Dairymaid (not ing with or employed by her parents) working for wages not ding £20 a year. [10 entries.]*

)—Miss EMMELINE FARRANT, Courtneys, Clyst Hydon, Exeter.

3.)—Mrs. A. HODGE, Charlton, Portbury, Bristol.

2.)—Miss L. WALKER, Whittocks End, *viâ* Dymock.

7. H. C.—Mrs. N. COMER, Surrenden Dairy, Pluckley, Ashford,

—Miss A. C. COLES, Home Farm, Easton Neston, Towcester:—and FH FARRANT, Ashclyst, Broadclyst, Exeter.

iss M. K. HARRIS, Barrow Hill Farm, Stourton Caundle, Stalbridge, and Miss L. TIDBALL, Preston, Milverton, Somerset.

18.—*On the second day of the Show, open to any Man or in who has never won a First Prize in any Butter-making etition, which was open to either men or women, or to both, ut further restriction. [22 entries.]*

)—Miss F. M. STUBBS, Highfields, Stafford.

3.)—Miss EDITH FARRANT, Ashclyst, Broadclyst, Exeter.

2.)—Miss A. BIDDLE, St. Arvans, Chepstow.

1.)—Miss H. M. TRENCHARD, Uphay Farm, Axminster.

7. H. C.—Miss EVANS, Chew Hill Farm, Chew Magna, Bristol.

—Miss M. BATTEN, Fore Street, Cullompton:—Mrs. N. COMER, Dairy, Pluckley, Ashford, Kent:—Miss E. M. COX, Pwlpen, rch, Newport, Mon.:—Miss G. L. LAWRENCE, Home Dairy Farm, 'ells:—Miss N. MUSGRAVE, Tunley Farm, Bath:—Mrs. W. TURNER, Court, Bampton, Devon:—and Miss L. WALKER, Whittocks End, ck.

s. E. A. DURMAN, Vicarage Farm, Hockworthy, Wellington, :—Miss J. JAMES, Blaen Baglan Farm, near Briton Ferry, South Miss M. G. PRIDEAUX, Motcombe, Dorset:—Miss A. PRIEST, Week orubury, Brandiscorner:—Miss E. SILLIFANT, Stockwell, Silvertown, and Miss A. M. M. SMITH, Rydon Mills, Woodbury, near Exeter.

179.—*On the third day of the Show, open to any Woman. [37 entries.]*

)—Mrs. F. C. LOXTON, The Creamery, Bath.

)—Miss M. I EIGHTON, Halloughton Grange, Whitcree, Birmingham.

III. (£2).—Miss G. L. LAWRENCE, Home Dairy Farm, Dinder, Wells.

IV. (£1).—Miss M. J. CAMP, Highfields Farm, Etwall, Derby.

R. & V. H. C.—Miss A. M. M. SMITH, Rydon Mills, Woodbury, near Exeter.

H. C.—Miss A. BIDDLE, St. Arvans, Chepstow :—Mrs. N. COMER, Surrenden Dairy, Pluckley, Ashford, Kent :—Miss B. PIPER, Thorpe, Thornbury, near Brandiscorner :—Mrs. G. SILLIFANT, Stockwell, Silverton, Exeter :—Miss J. STUBBS, Highfields, Stafford :—and Miss F. M. STUBBS, Highfields, Stafford.

C.—Miss E. BROOKS, Town Farm, Petrockstowe, Holton :—Miss E. G. COOK, Clock House Farm, Ashford, Middlesex :—Miss E. M. COX, Pwlpen, Christchurch, Newport, Mon. :—Mrs. E. A. DURMAN, Vicarage Farm, Hockworthy, Wellington, Somerset :—Miss EDITH FARRANT, Ashclyst, Broadclyst, Exeter :—Miss EMMELINE FARRANT, Courtneys, Clyst Hydon, Exeter :—Miss E. GEACH, 4, Trelawney Road, Falmouth :—Miss M. K. HARRIS, Barrow Hill Farm, Stourton Caundle, Stalbridge, Dorset :—Mrs. A. HODGE, Charlton, Portbury, Bristol :—Miss J. JAMES, Blaen Baglan Farm, near Briton Ferry, South Wales :—Miss H. M. TRENCHARD, Uphay Farm, Axminster :—Miss A. G. TREVORAH, Carclew Dairy, Perran-ar-Worthall, Cornwall :—Miss A. WADLOW, Arley, Bewdley, Worcestershire :—and Miss L. WALKER, Whittocks End, *via* Dymock.

CLASS 180.—*On the fourth day of the Show, open to any Man or Woman, except the Winner of the 1st Prize in Class 179.* [30 entries.]

I. (£4).—Miss M. J. CAMP, Highfields Farm, Etwall, Derby.

II. (£3).—Miss E. G. COOK, Clock House Farm, Ashford, Middlesex.

III. (£2).—Mrs. N. COMER, Surrenden Dairy, Pluckley, Ashford, Kent.

IV. (£1).—Miss J. STUBBS, Highfields, Stafford.

R. & V. H. C.—Mrs. A. HODGE, Charlton, Portbury, Bristol.

H. C.—Miss M. BATTEN, Fore Street, Cullompton :—Miss A. BIDDLE, St. Arvans, Chepstow :—Miss EVANS, Chew Hill Farm, Chew Magna, Bristol :—Miss EMMELINE FARRANT, Courtneys, Clyst Hydon, Exeter :—Miss M. LEIGHTON, Halloughton Grange, Whitacre, Birmingham :—Miss A. M. M. SMITH, Rydon Mills, Woodbury, Exeter :—and Miss F. M. STUBBS, Highfields, Stafford.

C.—Miss A. C. COLES, Home Farm, Easton Neston, Towcester :—Miss E. M. COX, Pwlpen, Christchurch, near Newport, Mon. :—Miss E. GEACH, 4, Trelawney Road, Falmouth :—Miss M. K. HARRIS, Barrow Hill Farm, Stourton Caundle, Stalbridge, Dorset :—Miss G. L. LAWRENCE, Home Dairy Farm, Dinder, Wells :—and Miss M. G. PRIDEAUX, Motcombe, Dorset.

CHAMPION PRIZES.

On the fifth day of the Show the Winners of Prizes in Classes 177, 178, 179, and 180 competed for :—

I. (A Gold Medal, and the Society's Certificate.)—Miss E. G. COOK.

II. (A Silver Medal, and the Society's Certificate.)—Miss M. J. CAMP.

III. (A Bronze Medal, and the Society's Certificate.)—Mrs. F. C. LOXTON.

R.—Mrs. N. COMER.

MILKING COMPETITIONS.

CLASS 181.—*For Men twenty years of age and over.* [5 entries.]

- I. (£1 10s.)**—E. M. COLES, Emborough Farm, near Bath.
- II. (£1.)**—G. MAYLETT, Hornsey Lane Farm, Stanhope Road, Highgate, N.
- III. (15s.)**—G. WINNER, Whipton, near Exeter.
- R.**—J. FRICKER, jun., Burton, Mere, Wilts.

CLASS 182.—*For Women twenty years of age and over.* [3 entries.]

- I. (£1 10s.)**—Mrs. N. COMER, Surrenden Dairy, Pluckley, Ashford, Kent.
- II. (£1.)**—Miss F. COOMBER, Way Farm, Tiverton.

CLASS 183.—*For Boys and Girls under twenty years of age.*
[6 entries.]

- I. (£1 10s.)**—E. W. COLES, Emborough Farm, Bath.
- II. (£1.)**—S. HORE, Whipton, near Exeter.
- III. (15s.)**—E. H. MERSON, Doniford, Watchet.
- R. & C.**—W. F. MERSON, Doniford, Watchet.

HORSE-SHOEING COMPETITION.

The Registration Committee of the Farriers' Company admitted the Winners of First Prizes in these Competitions to the Official Register *free of charge*, on their satisfying the Judges that they had a fair knowledge of the structure of the horse's foot, and on the necessary application being made to the Company in the prescribed form.

CLASS 184.—*Best Shoeing of a Nag Horse by a Smith on the third day of the Show.* [41 entries.]

- I. (£5.)**—J. REECK, 10, Chapel Bridge, Cwmcarn, near Newport, Mon.
- II. (£3.)**—F. HOLMAN, R.S.S., Colestocks, Ottery St. Mary.
- III. (£2.)**—C. COOK, West Monkton, Taunton.
- IV. (£1.)**—J. KERSLAKE, Williton, Somerset.
- R. & V. H. C.**—C. F. LOWTON, R.S.S., 3, Church Road, St. Thomas, Exeter.
- H. C.**—H. KERSLAKE, Williton, Somerset:—D. LLOYD, Dolygarreg Lodge, Llanwrda, South Wales:—and J. MALLETT, R.S.S., 8, Wolseley Terrace, Mutley, Plymouth.
- C.**—W. DENNER, R.S.S., Fore Street, Cullompton:—J. DOCKINGS, R.S.S., Broadmead Huish, near Dolton:—T. B. LEWIS, Curty Plas Forge, Llan-gadock:—and J. S. SANDERS, 106, Terrace Road, Swansea.

CLASS 185.—Best Shoeing of a Cart Horse by a Smith on the fourth day of the Show. [38 entries.]**I. (£5.)—G. JONES, R.S.S., Smith's Shop, The Hendre, Monmouth.****II. (£3.)—J. FRAYN, R.S.S., 2, Druckham Cottages, Launceston.****III. (£2.)—J. KERSLAKE, Williton, Somerset.****IV. (£1.)—J. R. FARR, R.S.S., Bridge Street, Abercarne, Mon.****R. & V. H. C.—A. RUDGE, Brampton, Madley, Herefordshire.****V. H. C.—W. D. LANE, R.S.S., Llanvetherine, near Abergavenny, Mon.****H. C.—T. B. LEWIS, Curty Plas Forge, Llangadock :—C. LODGE, 1, Albion Place, Tiverton Road, Exeter :—J. PLATT, Myrtle Cottage, Bagin Street, Treherbert, R.S.O. :—and W. H. SYMONS, R.S.S., 42, Tracey Street, Plymouth.****C.—J. DOCKINGS, R.S.S., Broadmead Huish, near Dolton :—T. H. FATHERS, Arcley Kings, Stourport :—F. HOLMAN, R.S.S., Colestocks, Ottery St. Mary :—D. LLOYD, Dolygarreg Lodge, Llanwrda, South Wales :—E. PROSSER, R.S.S., Senny Bridge, near Bricon :—W. H. ROWE, Five Lanes, Altarnam :—J. S. SANDERS, 106, Terrace Road, Swans a :—W. WELLAND, R.S.S., Berrow, Burnham, Somerset :—and U. WHITE, 3, North Row, Warminster, Wilts.****POULTRY.****CLASS 1.—COCHIN, COCK. [10 entries.]****I. (£1 10s.)—CORNISH AND SON.****II. (15s.)—Miss E. ROUSE.****III. (10s.)—R. HOLLAND.****R.—A. PARKER.****V. H. C.—J. E. GILBERT :—and G. LIAS.****H. C.—J. B. GILBERT.****CLASS 2.—COCHIN, HEN. [14 entries.]****I. (£1 10s.)—J. B. GILBERT.****II. (15s.)—R. HOLLAND.****III. (10s.)—Miss E. ROUSE.****R. & V. H. C.—J. B. GILBERT.****H. C.—CORNISH AND SON :—and J. B. GILBERT.****E. C.—J. B. ALLEN :—J. B. GILBERT :—and J. B. GILBERT.****CLASS 3.—BRAHMA, COCK. [10 entries.]****I. (£1 10s.)—J. W. THOMAS.****II. (15s.)—R. HOLLAND.****III. (10s.)—R. HOLLAND.****V. H. C.—G. W. HENSHALL :—and G. W. HENSHALL.****H. C.—G. W. HENSHALL :—E. SCAMMELL :—and J. A. SLATTER.**

Prizes awarded for Poultry.

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CLASS 4.—BRAHMA, HEN. [8 entries.]

- I. (£1 10s.)—Mrs. SPERLING.
- II. (15s.)—R. HOLLAND.
- III. (10s.)—G. W. HENSHALL.
- R.—E. HARRIS.
- V. H. C.—R. HOLLAND :—and A. E. MORGAN.

CLASS 5.—LANGSHAN, COCK. [16 entries.]

- I. (£1 10s.)—G. M. DOWNING.
- II. (15s.)—V. G. HUNTLEY.
- III. (10s.)—Mrs. ST. JOHN HOBNEY.
- V. H. C.—J. S. J. BALMENT :—J. HILL :—U. LOBB :—and G. F. C. PYPER.
- H. C.—J. S. J. BALMENT :—S. CLIMAS :—and H. WALLIS.

CLASS 6.—LANGSHAN, HEN. [12 entries.]

- I. (£1 10s.)—G. F. C. PYPER.
- II. (15s.)—J. S. J. BALMENT.
- III. (10s.)—W. RANDALL.
- V. H. C.—E. HORNE.
- H. C.—LORD DEERHURST :—and H. WALLIS.

CLASS 7.—PLYMOUTH ROCK, COCK. [8 entries.]

- I. (£1 10s.)—F. PORTER.
- II. (15s.)—H. QUICK.
- III. (10s.)—A. THOMAS.
- R.—ABBOTT BROS.
- H. C.—H. and C. EDWARDS :—and E. J. W. MATTHEWS.

CLASS 8.—PLYMOUTH ROCK, HEN. [6 entries.]

- I. (£1 10s.)—W. E. DANTON.
- II. (15s.)—E. J. W. MATTHEWS.
- III. (10s.)—J. H. WAY.
- R.—G. THOMPSON.

CLASS 9.—WYANDOTTE, COCK. [16 entries.]

- I. (£1 10s.)—H. PICKLES.
- II. (15s.)—Mrs. W. HOLMAN.
- III. (10s.)—Mrs. PIERSON.
- R.—Mrs. PIERSON.
- V. H. C.—J. W. HADLAND :—and W. HOLMAN.
- H. C.—ABBOTT BROS. :—C. SEABROOKE :—and J. W. TITT.

CLASS 10.—WYANDOTTE, HEN. [8 entries.]**I. (£1 10s.)—BOADEN and THOMAS.****II. (15s.)—MRS. W. HOLMAN.****III. (10s.)—F. STOODLEY.****R.—C. SEABROOKE.****V. H. C.—W. H. HUNT.****H. C.—J. W. TITT.****CLASS 11.—ORPINGTON, COCK. [10 entries.]****I. (£1 10s.)—R. DE C. PEELE.****II. (15s.)—W. COOK AND SONS.****III. (10s.)—V. G. HUNTLEY.****R.—W. ELFORD.****V. H. C.—V. G. HUNTLEY :—and MRS. TALBOT.****H. C.—J. F. HILL :—H. MOGG :—and W. NANSAWEN.****CLASS 12.—ORPINGTON, HEN. [9 entries.]****I. (£1 10s.)—R. DE C. PEELE.****II. (15s.)—W. COOK AND SONS.****III. (10s.)—V. G. HUNTLEY.****R.—J. DAVIES.****V. H. C.—T. BARRETT.****H. C.—A. W. PHILPOTT.****CLASS 13.—MINORCA (WHITE), COCK. [3 entries.]****I. (£1 10s.)—C. TOZER.****II. (15s.)—F. FOWLER.****CLASS 14.—MINORCA (WHITE), HEN. [5 entries.]****I. (£1 10s.)—D. W. LEWIS.****II. (15s.)—A. G. PITTS.****R.—J. RISON.****V. H. C.—A. G. PITTS :—and J. RISON.****CLASS 15.—MINORCA (OTHER THAN WHITE), COCK. [11 entries.]****I. (£1 10s.)—FURLAND BROS.****II. (15s.)—A. G. PITTS.****III. (10s.)—A. G. PITTS.****R.—A. TUCKER.****H. C.—H. HILL :—and W. PETER.**

CLASS 16.—MINORCA (OTHER THAN WHITE), HEN. [15 entries.]

- I. (£1 10s.)—A. G. PITTS.**
- II. (15s.)—J. W. CROSSMAN.**
- III. (10s.)—FURLAND BROS.**
- R.—FURLAND BROS.**
- V. H. C.—W. T. LITTEN.**
- H. C.—W. LETHEREN :—S. J. MARKS :—and A. TUCKER.**

CLASS 17.—LEGHORN, COCK. [10 entries.]

- I. (£1 10s.)—STANBURY BROS.**
- II. (15s.)—G. F. HIGGINSON.**
- III. (10s.)—J. A. BOOTH.**
- R.—MRS. LISTER-KAY.**
- H. C.—J. BRADFORD :—and STANBURY BROS.**

CLASS 18.—LEGHORN, HEN. [10 entries.]

- I. (£1 10s.)—STANBURY BROS.**
- II. (15s.)—MRS. SINKINS.**
- III. (10s.)—J. A. BOOTH.**
- R.—F. H. FULLER.**
- V. H. C.—J. C. LAMACRAFT.**
- H. C.—G. F. HIGGINSON.**

CLASS 19.—HAMBURG, COCK. [12 entries.]

- I. (£1 10s.)—H. PICKLES.**
- II. (15s.)—Rev. S. ASHWELL.**
- III. (10s.)—E. LUXTON.**
- R.—H. PITTS.**
- V. H. C.—J. CORNISH :—and G. DOBLE.**
- H. C.—T. FINCH.**

CLASS 20.—HAMBURG, HEN. [8 entries.]

- I. (£1 10s.)—G. DOBLE.**
- II. (15s.)—H. PICKLES.**
- III. (10s.)—J. CORNISH.**
- R.—T. FINCH.**

CLASS 21.—DORKING (COLOURED), COCK. [3 entries.]

- I. (£1 10s.)—NICHOLLS AND SONS.**
- II. (15s.)—H. REEVES.**
- R.—H. HILL.**

*Prizes awarded for Poultry.***CLASS 22.—DORKING (COLOURED), HEN. [4 entries.]**

- I. (£1 10s.)—H. REEVES.
- II. (15s.)—W. NANSCAWEN.
- R.—G. L. WARD.
- V. H. C.—H. REEVES.

CLASS 23.—DORKING (SILVER GREY), COCK. [6 entries.]

- I. (£1 10s.)—MRS. SPERLING.
- II. (15s.)—H. REEVES.
- III. (10s.)—HON. F. M. AMHERST.
- R.—H. REEVES.
- H. C.—MRS. SPERLING.

CLASS 24.—DORKING (SILVER GREY), HEN. [5 entries.]

- I. (£1 10s.)—H. REEVES.
- II. (15s.)—H. REEVES.
- R.—W. SNELL.

CLASS 25.—DORKING (WHITE OR CUCKOO), COCK. [2 entries.]

- I. (£1 10s.)—J. J. G. WOODCOCK.
- H. C.—S. W. BENNETT.

CLASS 26.—DORKING (WHITE OR CUCKOO), HEN. [5 entries.]

- I. (£1 10s.)—S. W. BENNETT.
- II. (15s.)—J. J. G. WOODCOCK.
- R.—C. B. FULLER.
- H. C.—C. B. FULLER.

CLASS 27.—OLD ENGLISH GAME, COCK. [10 entries.]

- II. (15s.)—T. T. CONIAM.
- III. (10s.)—Col. E. C. A. SANFORD.

CLASS 28.—OLD ENGLISH GAME, HEN. [7 entries.]

- I. (£1 10s.)—J. HUTCHINGS.
- II. (15s.)—J. D. T. PARSONS.
- III. (10s.)—MRS. C. A. HUME LONG.
- R.—E. NELME.
- V. H. C.—A. H. L.

CLASS 29.—INDIAN GAME, COCK. [9 entries.]

- I. (£1 10s.)—H. H. POTTER.
- II. (15s.)—T. RICH.
- III. (10s.)—SISTER M. URSULA.

Prizes awarded for Poultry.

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CLASS 30.—INDIAN GAME, HEN. [10 entries.]

- I. (£1 10s.)—T. RICH.
- II. (15s.)—Mrs. W. HOLMAN.
- III. (10s.)—J. COUCH.
- R.—W. BRENT.
- H. C.—T. TROTT.

CLASS 31.—MALAY, COCK. [9 entries.]

- I. (£1 10s.)—J. FRAYN.
- II. (15s.)—R. DE C. PEELE.
- III. (10s.)—J. C. HUXTABLE.
- R.—C. STEVENS.

CLASS 32.—MALAY, HEN. [8 entries.]

- I. (£1 10s.)—J. C. HUXTABLE.
- II. (15s.)—R. DE C. PEELE.
- III. (10s.)—J. FRAYN.
- R.—J. J. DAWE.
- H. C.—J. COCK.

CLASS 33.—FRENCH, COCK. [3 entries.]

- I. (£1 10s.)—S. W. THOMAS.
- II. (15s.)—S. W. THOMAS.

CLASS 34.—FRENCH, HEN. [3 entries.]

- I. (£1 10s.)—S. W. THOMAS.
- II. (15s.)—J. HILL.

CLASS 35.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCK. [8 entries.]

- I. (£1 10s.)—T. YOUREN, *Andalusian*.
- II. (15s.)—LORD DEERHURST, *Silky*.
- III. (10s.)—J. C. HUXTABLE, *Game*.

CLASS 36.—ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), HEN. [12 entries.]

- I. (£1 10s.)—F. STOODLEY, *American Dominique*.
- II. (15s.)—Mrs. G. DOBLE.
- III. (10s.)—J. COOMS.
- H. C.—LORD DEERHURST, *Silky*.

SPECIAL PRIZES.

(Given by Captain J. C. Best.)

CLASS 37.—Any Distinct Breed, COCK AND FOUR HENS, bred in 1898 or 1899, the Property of one Exhibitor. [26 entries.]

I. (£5.)—H. HILL, *Dorkings*.

II. (£3.)—Mrs. LISTER-KAY, *white Leghorns*.

III. (£2.)—T. RICH, *Indian Game*.

V. H. C.—Mrs. G. DOBLE.

H. C.—LORD DEERHURST, *Scotch Greys*:—R. HOLLAND, *Cochins*:—F. PORTER, *Andalusians*:—W. SNELL, *Minorcas*:—J. A. SLATTER, *Brahmas*:—and TIPPING and PRESTON, *Plymouth Rocks*.

C.—C. SEABROOKE, *Wyandottes*.

CHICKENS OF 1899.

CLASS 38.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, COCKEREL. [19 entries.]

I. (£1 10s.)—R. HOLLAND.

II. (15s.)—W. SLATER, *Plymouth Rock*.

III. (10s.)—BOADEN and THOMAS, January 3.

H. C.—W. HOLMAN, January 4:—and A. W. PHILPOTT.

CLASS 39.—COCHIN, BRAHMA, LANGSHAN, PLYMOUTH ROCK, WYANDOTTE, OR ORPINGTON, PULLET. [19 entries.]

I. (£1 10s.)—W. HOLMAN, *Wyandotte*, January 4.

II. (15s.)—R. J. C. LINGWOOD, *Cochin*, January.

III. (10s.)—Miss S. M. HOLMAN, *Wyandotte*, January 3.

H. C.—W. J. A. GRANT, *Orpington*, January 27 or 29.

C.—W. TALL, *Wyandotte*, January 8:—and H. WALLIS, January.

CLASS 40.—MINORCA, LEGHORN, HAMBURG, OR FRENCH, COCKEREL. [9 entries.]

I. (£1 10s.)—Miss S. M. HOLMAN, January 3.

II. (15s.)—G. L. WARD, *Leghorn*, January 18.

III. (10s.)—T. FAWKES, *Minorca*, January 15.

H. C.—E. COVENTRY, *Minorca*, January 17.

CLASS 41.—MINORCA, LEGHORN, HAMBURG, OR FRENCH, PULLET. [9 entries.]

I. (£1 10s.)—J. HILL, *Houdan*, January 10.

II. (15s.)—STANBURY BROS., *Leghorn*, January 1.

III. (10s.)—G. L. WARD, *Leghorn*, January 18.

C.—Rev. J. H. B. WOLLOCOMBE, *silver Duckwing Leghorn*, January.

Prizes awarded for Poultry.

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CLASS 42.—DORKING, GAME, MALAY, OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), COCKEREL. [12 entries.]

I. (£1 10s.)—J. FRAYN, *Malay*, January 3.

II. (15s.)—H. HILL, *Indian Game*, January 2.

III. (10s.)—W. BRENT, *Indian Game*, January.

CLASS 43.—DORKING, GAME, MALAY, OR ANY OTHER DISTINCT BREED (NOT PREVIOUSLY MENTIONED), PULLET. [10 entries.]

I. (£1 10s.)—H. HILL, *Dorking*, January 2.

II. (15s.)—J. FRAYN, *Malay*, January 3.

III. (10s.)—J. COUCH, *Indian Game*, January.

H. C.—R. PARKHOUSE, *Malay*, January 7 :—J. REED, *Malay*, January 10 :—and A. STONE, *Indian Game*, January 5.

LIVE TABLE POULTRY.

CLASS 44.—PAIR OF COCKERELS OF 1899, OF ANY PURE BREED. [7 entries.]

I. (£1 10s.)—S. FRIEND, *Indian Game*, January 1.

II. (15s.)—H. REEVES, *Dorkings*, January 10.

III. (10s.)—W. J. A. GRANT, *Wyandotte*, January 27 or 29.

H. C.—W. BRENT, *Indian Game*.

CLASS 45.—PAIR OF PULLETS OF 1899, OF ANY PURE BREED. [8 entries.]

I. (£1 10s.)—H. F. H. E. LOCKE KING, *Dorkings*, January 5.

II. (15s.)—J. N. JACKMAN, *Indian Game*, January.

III. (10s.)—W. J. A. GRANT, *Orpington*, January 27 or 29.

H. C.—H. REEVES, *Dorkings*, January 10 :—and A. STONE, *Indian Game*, January 5.

CLASS 46.—PAIR OF COCKERELS OF 1899, OF A FIRST CROSS FROM ANY PURE BREEDS. [3 entries.]

I. (£1 10s.)—W. J. A. GRANT, *Indian Game-Orpington*, February.

II. (15s.)—H. HILL, *Indian Game-Dorking*, February 10.

CLASS 47.—PAIR OF PULLETS OF 1899, OF A FIRST CROSS FROM ANY PURE BREEDS. [1 entry.]

III. (10s.)—W. J. A. GRANT, *Indian Game-Orpington*, February.

SELLING CLASSES.

CLASS 48.—ANY DISTINCT BREED, COCK (PRICE NOT TO EXCEED £1 1s.). [14 entries.]

I. (£1 10s.)—Mrs. G. DOBLE.

II. (15s.)—Miss S. M. HOLMAN.

III. (10s.)—A. J. C. HUNT, *Hamburg*.

CLASS 49.—ANY DISTINCT BREED, HEN (PRICE NOT TO EXCEED £1 1s.)
[16 entries.]

- I. (£1 10s.)—T. RICH, *Indian Game*.
- II. (15s.)—W. E. DAINTON, *Plymouth Rock*.
- III. (10s.)—A. J. C. HUNT, *Hamburg*.
- H. C.—J. B. GILBERT, *buff Cochins*.

DUCKS, GEESE, AND TURKEYS.

CLASS 50.—DRAKE OR DUCK (AYLESBURY). [5 entries.]

- I. (£1 10s.)—F. READ.
- II. (15s.)—F. READ.
- R.—M. B. BRUCE.
- H. C.—V. G. HUNTLEY.

CLASS 51.—DRAKE OR DUCK (ROUEN). [4 entries.]

- I. (£1 10s.)—V. G. HUNTLEY.
- II. (15s.)—V. G. HUNTLEY.
- R.—V. G. HUNTLEY.

CLASS 52.—DRAKE OR DUCK (PEKIN). [5 entries.]

- I. (£1 10s.)—H. G. WITHERS.
- II. (15s.)—O. PHILLIPS.
- R.—O. PHILLIPS.

CLASS 53.—GANDER. [5 entries.]

- I. (£1 10s.)—V. G. HUNTLEY.
- II. (15s.)—ABBOTT BROS.
- R.—W. E. DAINTON.

CLASS 54.—GOOSE. [5 entries.]

- I. (£1 10s.)—W. E. DAINTON.
- II. (15s.)—ABBOTT BROS.
- R.—V. G. HUNTLEY.

CLASS 55.—TURKEY, COCK. [8 entries.]

- I. (£1 10s.)—H. CANNON.
- II. (15s.)—W. JOHNSON.
- III. (10s.)—Col. E. C. A. SANFORD.
- R.—J. F. HILL.
- V. H. C.—ABBOTT BROS. :—and Mrs. REW.
- H. C.—W. F. SNELL.

Prizes awarded for Poultry.

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CLASS 56.—TURKEY, HEN. [3 entries.]

- 10s.)—ABBOTT BROS.
5s.)—W. JOHNSON.
—J. F. HILL.

DEAD TABLE POULTRY.

awarded alive, and killed and plucked by a Poulterer acting for the Society.)

CLASS 57.—PAIR OF COCKERELS OF 1899, OF ANY PURE BREED. [5 entries.]

- 10s.)—W. J. A. GRANT, *Orpington*, January 27 or 29.
5s.)—H. HILL, *Indian Game*, January 2.

CLASS 58.—PAIR OF PULLETS OF 1899, OF ANY PURE BREED. [6 entries.]

- 10s.)—S. FRIEND, *Indian Game*, January 1.
5s.)—Mr. J. HEBDITCH, *Faverolle*, January 31.
10s.)—W. J. A. GRANT, *Orpington*, January 27 or 29.

CLASS 59.—PAIR OF COCKERELS OF 1899, OF A FIRST CROSS FROM ANY PURE BREEDS. [10 entries.]

- 10s.)—F. H. WEBER, *Indian Game-Dorking*, January 1.
5s.)—H. FRICKER, *Indian Game-Dorking*, February 10.
10s.)—W. J. A. GRANT, *Indian Game-Dorking*, February 5.
—H. HILL, *Indian Game-Dorking*, February 10.

CLASS 60.—PAIR OF PULLETS OF 1899, OF A FIRST CROSS FROM ANY PURE BREEDS. [6 entries.]

- 10s.)—H. HILL, *Indian Game-Dorking*, January 2.
5s.)—W. HAMBLBY, *Golden Wyandotte-Dorking*, January 5.
10s.)—H. FRICKER, *Indian Game-Dorking*, February 10.

CLASS 61.—PAIR OF DUCKLINGS OF 1899. [8 entries.]

- 10s.)—F. READ, *Aylesbury*, March 20.
5s.)—F. READ, *Aylesbury*, March 20.
10s.)—H. HILL, *Aylesbury-Pekin*, March 23.
—T. LOCKYER, February 13.

BATH AND WEST AND SOUTHERN COUNTIES SOCIETY.

ART UNION HELD AT EXETER, MAY 29, 1899.

Prize Ticket.	Value of Prize.		Prize Winner.	Winner's Address.	Name of Picture.	Artist.	Price of Picture.		
	£	s.					£	s.	d.
2237	20	0	G. W. Clifford ..	Hadley, St. Sidwells, Exeter	A Tributary of the Avon ..	W. Boodle ..	20	0	0
2500	15	15	C. T. Salthorpe ..	Harrogate	Heralds of Winter	Miss P. Trump ..	15	0	0
					Full Cry	A. Duke	10	10	0
1152	12	12	L. Rowell	Manor House, Bradninch ..	Narcissi	Miss H. Craven ..	1	10	0
					The Hague	Miss O. Tuppen ..	0	10	6
2008	10	10	A. Hammett	8, The Crescent, Taunton ..	A Grey Day on the Exe ..	F. J. Widgery	10	10	0
					The Close of an October Day	H. H. Cubley	5	5	0
2082	10	10	G. F. C. Pyper ..	40, Queen Street, Exeter ..	A Rest by the Way	C. Boodle	3	3	0
					The Close of an April Day	E. A. Tozer	2	2	0
					(Dartmoor)				
2090	10	0	H. Welman	74, Paris Street, Exeter ..	St. Mary's Steps, Church, &c.,	A. Leyman	8	8	0
					Exeter				
16	10	0	B. Hatch	Oldfield Park, Bath	Primroses	Mrs. J. L. Pengolly ..	1	1	0
					Landscap with Cattle	J. Barker	10	0	0
1930	8	0	H. G. Burden ..	21, Tynwald Hill, Liverpool	On the Blyth	T. Thomas	5	0	0
					Looking up the Exe from				
					Salmon Pool	A. J. Couche	3	3	0
1226	6	0	S. Gibbons	3, Butler Road, St. Thomas	Cock's Tor, Dartmouth ..	W. S. Morrish	6	6	0
766	5	5	W. H. Fowler ..	St. Agnes, St. Andrews, Fife	Oyster Fishermen, Cancale, Brittany	R. W. Vernon	5	5	0
2535	5	5	L. Inledon	24, Oxford Road	Common, Budleigh Salterton	Miss A. Hope	5	5	0
1382	5	5	D. Theunissen ..	5, High Street, Exeter ..	Near Leamington	J. Thors	5	5	0
148	5	5	M. E. Porter	Ruskin Cottage, Sherborne ..	Piggle Bridge	W. S. Morrish	5	0	0
2225	5	5	E. H. Osman	St. Thomas, Exeter	Near Palermo	C. Rowbotham	5	5	0
1368	5	5	Miss Rookes	Baring House, Exeter	Double Locks on Exeter Canal	F. J. Aldridge	8	8	0

441	4 4	Mrs. M. Farrant	137, Cowick Street, Thomas, Exeter ..	Primrose ..	.. .. .	Mrs. E. Adamson ..	4 4 0
1406	4 4	J. H. Edwards ..	5, Hampton Place, St. Mary Church, Torquay ..	Wild Parsley ..	.. .. .	H. J. Kinnaird ..	4 4 0
2433	4 4	R. W. Tozer ..	5, Bystock Terrace, Exeter ..	On the Thames, near Pang- bourne ..	.. .. .	E. A. Tozer ..	3 3 0
2153	4 4	Mrs. F. H. Pomeroy	7, Union Road, Exeter ..	Evening, Tary Cleave, Dart- moor ..	.. .. .	Miss T. Damerel ..	1 1 0
179	3 3	L. Smale ..	1, Topham Road, Exeter ..	Azaleas ..	.. .. .	W. A. Thornbery ..	4 4 0
653	3 3	W. J. Gibbons ..	Tunley, Bath ..	Wind Against Tide, Hay Barges off Gravesend ..	.. .. .	W. J. Gibbons ..	3 3 0
1619	3 3	A. Mason ..	Swansea ..	The Incoming Tide ..	.. .. .	H. S. Jackson ..	2 2 0
754	3 3	B. C. Ransome ..	Shirleigh, St. Edmund's Road, Ipswich ..	Salmon Pool, near Exeter (Glen Almond, Scotland ..	.. .. .	Miss A. Mongredien ..	1 10 0
2131	3 3	L. Rosaiter ..	Fishacre, Totnes ..	Rowley, Derbyshire ..	.. .. .	Miss C. L. Davis ..	3 3 0
1599	3 3	F. J. C. Bowden	Black Hall, South Brent, Devon ..	Fruit Piece ..	.. .. .	Miss A. Holding ..	3 3 0
784	2 2	J. Gage ..	Azminster ..	Misty Heights of Dartmoor ..	.. .. .	E. Tozer ..	3 3 0
1776	2 2	G. Pain ..	Devon and Cornwall Bank, Exeter ..	Old Colours, North Transept, Exeter Cathedral ..	.. .. .	Mrs. Robson ..	3 10 0
2107	2 2	Unclaimed ..	.. .. .	Near St. George's Chapel ..	.. .. .	H. S. Jackson ..	2 2 0
2104	2 2	S. Hawken ..	5, Elm Grove Road, Exeter	The Bridge Farm ..	.. .. .	Wiggo Kinnaird ..	5 0 0
1684	2 2	C. E. Dean ..	Elmgrove House, Exeter ..	Carnations ..	.. .. .	Miss B. F. Hunter	2 2 0
2563	2 2	E. E. G. Tucker	Alphington, Exeter ..	Old Cottage at Tarbert, Loch Fyne ..	.. .. .	C. Boodle ..	3 3 0
1273	2 2	B. C. Ransome ..	Shirleigh, St. Edmund's Road, Ipswich ..	Still Life, Grapes ..	.. .. .	Miss L. H. Passmore	2 2 0
492	2 2	M. A. Hibberd ..	7, Lyndhurst Road, Exeter ..	Near Dinas Powis ..	.. .. .	Miss E. Horne ..	2 2 0
				Lambeth Palace ..	.. .. .	Mrs. de Crespigny ..	2 2 0
				Evening on Dartmoor ..	.. .. .	Mrs. L. Ravenscroft	2 2 0
Unclaimed Prizes of Previous Year.							
2076	4 4	J. Tanner ..	7, Springfield, Tiverton, Devon	Stella ..	.. .. .	Miss A. Hunter ..	4 4 0

July 26th, 1899.

By Order THOS. F. FLOWMAN,
4, Terrace Walk, Bath.

Bath and West and Southern Counties Society.

OBJECTS OF THE SOCIETY AND PRIVILEGES OF MEMBERSHIP.

ANNUAL EXHIBITIONS.

The Society annually holds an Exhibition in some city or town in England or Wales. Each section of the Society's district is visited at intervals, so that most Members have an opportunity of seeing the Show in their own neighbourhood every few years. Prizes to a large amount are given for Horses, Cattle, Sheep, Pigs, Farm Produce, &c. Provision is also made for the exhibition of Agricultural Implements and Machinery, Seeds, Cattle Foods, Artificial Manures, and articles of general utility. A substantially-built and completely-equipped Working-Dairy on a large scale is a special feature of these Exhibitions. Here explanatory demonstrations, and comparative tests of implements and processes are carried on with the assistance of well-known practical and scientific experts, and Butter-making Competitions are held. Among other features of the Annual Meeting are Shoeing and Milking Competitions, Poultry and Horticultural Shows, and Exhibitions illustrative of Bee-keeping, Home Industries, Art-Manufactures, and the Fine Arts.

Membership entitles to free admission to the Annual Exhibition, and also to the Grand Stand overlooking the Horse and Cattle Ring, to the Reserved Seats in the Working Dairy, and to the use of the Members' Special Pavilion for Reading, Writing, &c.

Entries can be made by Members (elected on or before the last Tuesday in January preceding the Show) at 10s. per entry for Horses (other than Harness), and 5s. per entry for Cattle, Sheep, and Pigs. Non-Members are required to pay £1 per entry for Horses (other than Harness) and 15s. per entry for the other Stock named. Similar reductions in the Fees in the Farm Produce, the Poultry, and other Classes are made to Members.

THE JOURNAL.

All Members receive free of charge the Society's Journal, which is published annually, bound in cloth. It has for its aim the dissemination of agricultural knowledge in a popular form, and in addition to original articles by well-known agricultural authorities, it contains particulars of the Society's general operations, full reports of its experimental and research work, prize awards, financial statements, lists of Members, reviews of new books on agriculture, &c. (The price of the Journal to non-Members is 6s. 4d. post free.)

CHEMICAL AND BOTANICAL FACILITIES.

The Society has a Consulting Chemist (Dr. J. A. Voelcker, M.A., F.I.C., &c.), and a Consulting Botanist (Mr. W. Carruthers, F.R.S.), from whom Members can obtain analyses and reports at reduced rates of charge.

EXPERIMENTS.

Experiments on Crops are conducted at experimental stations in various parts of the kingdom, and Members are enabled to take part in these and to receive reports thereon.

The Society has also an experimental station and laboratory at Butleigh for

carrying on researches in connection with Cider-making. Here systematic investigations are conducted by a scientific staff, acting in conjunction with practical experts, *detailed reports of which are furnished to Members.*

TECHNICAL EDUCATION.

The Society conducts, on behalf of the Somerset County Council, a Cheese School, where Students are received and boarded, and also a Travelling Farriery School for promoting improvement in the Shoeing of Horses. *Members are admitted free to witness the Teaching and Competitions at any of the Society's Schools.*

FINE ART AND ART-MANUFACTURES.

One of the objects for which the Society was founded was the encouragement of Arts as well as Agriculture, and, to this end, exhibitions of Paintings and Art-Manufactures are annually held. The special aims of the Society in maintaining this department are:—1st. The encouragement of young Artists, especially, and of local efforts to bring art-workmanship to bear in the production of decorative or useful articles. 2nd. The exhibition of such art treasures as there may be in private or other collections, to which the public, ordinarily, have no access. No charge is made to Artists for the exhibitions of their Paintings, and, in order to promote the sale of meritorious works, an Art Union is held, the prizes for which are selected from the Pictures exhibited, a large sum being annually voted by the Society towards their purchase.

TERMS OF MEMBERSHIP.

ANNUAL SUBSCRIPTIONS.

Ordinary Members, not less than	£1
Tenant Farmers, the rateable value of whose holdings does not exceed £200 a-year, not less than	10/-

Governors, who are eligible for election as President or Vice-President, and who subscribe not less than £2, are entitled, in addition to the privileges already mentioned, to an extra Season Ticket for the Annual Exhibition and to the Grand Stand, &c. Governors subscribing more than £2 are entitled to a further Ticket for every additional £1 subscribed.

Members subscribing less than £1 are entitled to all the privileges of Membership except that of entering Stock at reduced fees, and their admission Ticket for the Annual Show is available for *one day only* instead of for the whole time of the Exhibition.

LIFE COMPOSITIONS.

Governors may compound for their Subscriptions for future years by payment, in advance, of £20; and Members by payment, in advance, of £10. Governors and Members who have subscribed for 20 years may become Life-Members on payment of half these amounts.

Any person desirous of joining the Society can be proposed by a Member, or by

THOS. F. PLOWMAN,
Secretary and Editor,

4, Terrace Walk, Bath.

Telegraphic Address :—"PLOWMAN, BATH."

Bath and West and Southern Counties Society.

GENERAL LAWS,

As revised in accordance with the Report of a Special Committee; which Report was received and adopted by the Annual General Meeting of Members, held on May 30, 1895.

COMPOSITION OF THE SOCIETY.

I. The Society shall consist of a President, Vice-Presidents, Trustees, Council, Treasurer, Secretary, and Members.

OBJECTS.

II. The Society shall have the following objects :—

- a. To hold Exhibitions of breeding stock, agricultural implements, and such other articles connected with agriculture, arts, manufactures or commerce as may be determined upon by the Council.
- b. To conduct practical and scientific investigations in agriculture.
- c. To promote technical education in agriculture by providing means of systematic instruction.
- d. To publish a Journal for circulation.

SUBSCRIPTIONS.

III. The Annual Subscriptions for Members shall be as follows :—

Governors (who are eligible for election as President or Vice-President) not less than	£2
Ordinary Members, not less than	£1
Tenant Farmers (the rateable value of whose holding does not exceed £200 a-year) not less than	10/-

IV. The payment of £20 in one sum shall constitute a Governor for life, and of £10 in one sum an Ordinary Member for life; but any Governor who has subscribed not less than £2 annually for a period of twenty years may become a life Governor on the further payment of £10 in one sum; and any Ordinary Member, who has subscribed not less than £1 annually for the same period, may become a Life-Member on the further payment of £5 in one sum.

V. Subscriptions shall become due and be payable in advance on the 1st of January in each year or as soon as the Subscriber has been elected a Member. When the election takes place during the last quarter of the year the subscription payable on election will be considered as applying to the ensuing year.

VI. A Member shall be liable to pay his subscription for the current year unless he shall have given notice, in writing, to the Secretary before January 1st of his intention to withdraw.

GOVERNING BODY.

VII. The entire management of the Society—including the making of By-laws, election of Members, determining the Prizes to be awarded, appointing Committees, fixing the Places of Meetings and Exhibitions, appointing or removing the Treasurer, Secretary, and such other officers as may be required to carry on

the business of the Society—shall be vested in the Council, who shall report its proceedings at the Annual Meetings of the Society.

VIII. The Council shall consist of the Patron (if any), President, Vice-Presidents, Trustees, and Treasurer (who shall be *ex-officio* Members), and of sixty-six elected Members.

ELECTION OF PRESIDENT, VICE-PRESIDENTS, TRUSTEES, AND COUNCIL.

IX. The election of a President for the year, of any additional Vice-President, of Trustees, and of the Members of Council representing the Divisions named in Law X., shall take place at the Annual Meeting of the Society, and they shall enter into office at the conclusion of the Exhibition during which such Annual Meeting has been held.

X. The sixty-six Members of the Council referred to in Laws VIII. and IX. shall consist of fifty-eight persons residing or representing property in the following Divisions, viz. :—

Twelve from the Counties of Devon and Cornwall, which shall be called the Western Division;

Twenty-four from the Counties of Somerset, Dorset, and Wilts, which shall be called the Central Division;

Twelve from the Counties of Hants, Berks, Oxon, Bucks, Middlesex, Surrey, Sussex, and Kent, which shall be called the Southern Division; and

Ten from the Counties of Worcester, Gloucester, Hereford and Monmouth, and the Principality of Wales, which shall be called the North-Western Division.

The remaining eight shall be elected (irrespective of locality) from the general body of Members, and shall form a Division which shall be called the "Without Reference to District" Division.

XI. One half of the elected Members in each of the five Divisions named in Law X. shall retire annually by rotation, but shall be eligible for re-election.

XII. The Council shall have power to nominate a President, Vice-Presidents, Trustees, and Members of Council for the approval of the annual meeting, and to fill up such vacancies in their own body as are left after the annual meeting, or as may from time to time occur during the interval between the annual meetings.

XIII. Nominations to offices, election to which is vested in the whole body of Members, must reach the Secretary ten days before the meeting at which such vacancies are to be filled up.

MEETINGS.

XIV. The Annual Meeting of the Society shall take place during the holding of the annual Exhibition.

XV. Special general meetings of the Society may be convened by the President on the written requisition of not less than three Members of Council; and all Members shall have ten days' notice of the object for which they are called together.

XVI. No Member of less than three months' standing, or whose subscription is in arrear, shall be entitled to vote at a meeting.

EXHIBITIONS.

XVII. The annual Exhibitions of the Society shall be held in different Cities or Towns in successive years.

XVIII. All Exhibitors shall pay such fees as may be fixed by the Council. Members subscribing not less than £1 per annum, who have been elected previous to February 1st, and have paid the subscription for the current year, shall be entitled to exhibit at such reduction in these fees as the Council shall determine.

PRIZES.

XIX. All prizes offered at the cost of the Society shall be open for competition to the United Kingdom.

XX. No person intending to compete for any prize offered at the annual Exhibition shall be eligible to act as a judge or to have any voice in the selection of judges to award the premiums in the department in which he exhibits.

XXI. If it be proved to the satisfaction of the Council that any person has attempted to gain a prize in this, or in any other Society, by a false certificate or by a misrepresentation of any kind, such person shall thereupon be for the future excluded from exhibiting in this Society.

JOURNAL.

XXII. The Proceedings of the Society, Awards of Prizes, Financial Statements, and List of Officers, Governors and Members shall be printed annually in the Society's Journal, and every Governor and Member, not in arrear with his subscription, shall be entitled to receive one copy, free of expense, and there shall be an additional number printed for sale.

POLITICS.

XXIII. No subject or question of a political tendency shall be introduced at any meeting of this Society.

ALTERATIONS IN LAWS.

XXIV. No new General Law shall be made or existing one altered, added to or rescinded, except at an annual or special general meeting, and then only provided that a statement of particulars, in writing, shall have been sent to the Secretary at least twenty-one days previous to the meeting at which the question is to be considered.

List of Officers.

1899-1900.

BATH MEETING.

PATRON.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.

PRESIDENT FOR 1899-1900.

THE MOST HON. THE MARQUESS OF BATH, Longleat, Warminster.

TRUSTEES.

PAGET, THE RIGHT HON. SIR RICHARD HORNER, Bart., Cranmore Hall,
Shepton Mallet.

*CLINTON, THE RIGHT HON. THE LORD, Heanton Satchville, Dolton,
N. Devon.

VICE-PRESIDENTS.

YORK, H.R.H. THE DUKE OF, K.G.	York House, London, S.W.
ACLAND, SIR C. T. D., Bart.	Holnicote, Taunton
*AMHERST, EARL	Montreal, Sevenoaks, Kent
BELFIELD, JOHN	Primley Hill, Torquay
BEST, CAPT. J. C., R.N.	Vivod, Llangollen
BRYMER, W. E., M.P.	Ilington House, Dorchester
*CLARENDON, EARL OF	The Grove, Watford [Devon
*CLINTON, LORD	Heanton Satchville, Dolton, N.
*CORK AND ORRERY, EARL OF	Marston, Frome [Dorset
*COVENTRY, EARL OF	Croome Court, Severn Stoke, Wor-
DAW, R. R. M.	Spurbarne, Exeter
DEVONSHIRE, DUKE OF, K.G.	Chatsworth, Derbyshire
DIGBY, G. D. W.	Sherborne Castle, Sherborne
*DUCIE, EARL OF	Tortworth, Falfield, R.S.O.
*FORTESCUE, EARL	Castle Hill, South Molton
GIBBS, A.	Tyntesfield, Bristol
GORING, REV. J.	Wiston Park, Steyning
HULSE, SIR E., Bart.	Breamore, Salisbury
*ILCHESTER, EARL OF	Melbury, Dorchester
*JERSEY, EARL OF	Middleton Park, Bicester, Oxon.
JONES, H. P.	Beaufort House, Winchester
*LANSLOWNE, MARQUESS OF, K.G.	Bowood, Calne
LECONFIELD, LORD	Petworth House, Sussex
*LEWELYN, SIR J. T. D., Bart., M.P.	Penllergare, Swansea
*LOPES, THE RIGHT HON. SIR M., Bart.	Maristow, Roborough, S. Devon
LOYD, LEWIS	Monk's Orchard, Bromley, Kent
MILDMAY, SIR H. ST. JOHN, Bart.	Dogmersfield Park, Winchfield
*MONTAGU OF BEAULIEU, LORD	Palace House, Beaulieu, Hants
MOORE-STEVENS, J. C.	Win-cott, Great Torrington

* Those to whose names an asterisk (*) is prefixed have filled the office of President.

VICE-PRESIDENTS—*continued.*

MORETON, LORD.	Sarsden House, Chipping Norton
*MORLEY, EARL OF	Saltram, Plympton, Devon
MORRELL, G. HERBERT, M.P.	Headington Hill Hall, Oxford
*MOUNT-EDGCOMBE, EARL OF	Mount Edgcumbe, Devonport
NEVILLE-GRENVILLE, R.	Butleigh Court, Glastonbury
NORTHUMBERLAND, DUKE OF	Albury Park, Guildford
*ONSLOW, EARL OF	7, Whitehall Place, London, S.W.
PAGET, THE RIGHT HON. SIR R. H., Bart.	Cranmore Hall, Shepton Mallet
PINNEY, W.	Somerton
POLTIMORE, LORD	Poltimore, Exeter
*PORTMAN, VISCOUNT	Bryanston, Blandford
PORTAL, MELVILLE	Laverstock House, Micheldever, Hants
SAINT GERMAN, EARL OF	Port Elliot, Devonport
SKRINE, H. D.	Claverton Manor, Bath.
SOMERSET, DUKE OF	Maiden Bradley, Bath
STORY-MASKELYNE, N.	Bassett Down House, Swindon
STUCLEY, SIR G. S., Bart.	Moreton, Bideford, N. Devon
*TEMPLE, EARL	Newton Park, Bath.
THYNNE, LORD HENRY	Muntham, Worthing
*TREDGAR, LORD	Tredegar Park, Newport, Monmouth
*TREMAYNE, JOHN	Heligan, St. Austell
WALROND, RIGHT HON. SIR W. H., Bart., M.P.	Bradfield, Cullompton
*WARWICK, EARL OF	Warwick Castle
WILLIAMS, E. W.	Herrington, Dorchester
*WINDSOR, LORD.	Hewell Grange, Bromsgrove
THE LORD WARDEN OF THE STANNARIES.	
THE SURVEYOR-GENERAL OF THE DUCHY OF CORNWALL.	
THE RECEIVER-GENERAL OF THE DUCHY OF CORNWALL.	

. Those to whose names an asterisk () is prefixed have filled the office of President.

MEMBERS OF COUNCIL.

EX-OFFICIO MEMBERS.

THE PATRON.
THE PRESIDENT.
THE VICE-PRESIDENTS.

THE TREASURER.
THE CONSULTING SURVEYOR.

ELECTED MEMBERS.

WESTERN DIVISION (DEVON AND CORNWALL).

(12 Representatives.)

Elected in 1898:—

<i>Name.</i>	<i>Address.</i>
NS, C. R. . .	Hartwell House, Exeter
ER, R. . .	Combe, Honiton
RY, SIR J., Bt.	Shobrooke Park, Crediton
IAMS, SIR W. R.,	
t.	Heanton, Barnstaple
ELL, R. . .	Thorverton, Devon.
T-EDGEELL, COL. A.	Cowley Place, Exeter

Elected in 1899:—

<i>Name.</i>	<i>Address.</i>
BOSCAWEN, REV. A.	Ludgvan Rectory, Long
T.	Roch, R.S.O., Cornwall
DRUMMOND, H. W.	Syon House, Budleigh,
	Devon
BYMOND, F. W.	Bampfylde House, Exeter
LLEWELLYN, W. J.	Southwood, Tiverton
SILLIFANT, A. O.	Coombe, Copplestone
VOSPER, W. P.	Merafield, Plymouth

CENTRAL DIVISION (SOMERSET, DORSET, AND WILTSHIRE).

(24 Representatives.)

N, J. D.	Springfield House, Shepton
	Mallet
COL. G.	Charlton House, Ludwell,
	Salisbury
ROFT, E. T. D.	Hinton Charterhouse, Bath
N, J. T.	Hayvet Lodge, Langford,
	R.S.O., Somerset
AR, COL. C. W. H.	Poundisford, Taunton
OUSE, H., M.P.	Hadspen House, Castle Cary
ELLYN, E. H.	Langford Court, Langford,
	Somerset
E. M. St. J.	Chapel House, Bath
ER, H. B.	Chippenham
D, Sir A. W.,	
t.	Grittleton, Chippenham
STON, MAJOR C. D.	Evercreech, Bath
FE, COL. H. M.	Warleigh Manor, Bath

BROWN, W. J.	Middlehill House, Box,
	Wilts
DYKE, T.	Long Ashton Lodge, Clifton
EDWARDS, C. L. F.	The Court, Axbridge,
	Somerset
FARWELL, F. G.	11, Laura Place, Bath
FOWLER, W. H.	Claremont, Taunton
GIBBONS, G.	Tunley Farm, near Bath
HALL, J. F.	Sharcombe, Wells, Somers-
	set
HEYTESBURY, LORD	Heytesbury, Wilts
HOOD, SIR A. AC-	
LAND, Bart., M.P.	St. Audries, Bridgwater
RAWLENCE, P. A.	Newlands, Salisbury
SKINNER, A. C.	Pound, Bishop's Lydeard,
	Somerset
STRACHEY, E., M.P.	Pensford, Somerset

SOUTHERN DIVISION (HANTS, BERKS, OXON, BUCKS, MIDDLESEX, SURREY, SUSSEX, AND KENT).

(12 Representatives.)

S, A. F. M.	Bladon, Woodstock
LYS, C. R.	Grange Cottage, Alres-
	ford, Hants
ERFORD, J. A.	Highclere Castle, New-
	bury
FORD, A.	Eatons, Steyning
HEAD, C., F.L.S.	Barming House, Maldstone
IAMS, A. G.	Portsea, Hants

ASHCROFT, W.	13, The Waldrons, Croy-
	don
BOTTLER, CAPT. W. J. C.	The Elms, Taplow
CUNDALL, H. M., F.S.A.	Richmond, Surrey
PAIN, C.	Grosvenor House, Stock-
	bridge, Hants
SEYMOUR, R. A. H.	46, Earl Street, Maldstone
SUTTON, M. J.	Henley Park, Oxon

TH-WESTERN DIVISION (WORCESTERSHIRE, GLOUCESTERSHIRE, HEREFORDSHIRE, MONMOUTHSHIRE, AND WALES).

(10 Representatives.)

RIGHT, J. H.	Hampton Court, Leomin-
	ster
IN, G. E.	Ham Court, Upton-on-
	Severn
N, A.	North Hill, Swansea
IPS, C. D.	Newport, Mon.
TON, R.	The Duffryn, Newport,
	Mou.

ALEXANDER, D. T.	Cardiff
BAKER, G. E. LLOYD	Hardwicke Court, Glou-
	cester
BRITTON, ADMIRAL	
R. F.	Kenswick, Worcester
TAYLOR, H. W.	Showle Court, Ledbury
TURNER, A. P.	The Leen, Pembridge,
	Hereford

WITHOUT REFERENCE TO DISTRICT DIVISION.

(8 Representatives.)

CAPT. T. G.	Abbott's Ann, Andover,
	Hants
G, C.	Wiston Park, Steyning
AM, T.	Dorchester, Oxon
ME, J. E.	Orwell Works, Ipswich

COBB, H. M.	Higham, Kent
MATHEWS, E.	Chequers Mead, Potters
	Bar
NAPER, COL. W. D.	84, Cornwall Gardens,
	London, S.W.

STANDING COMMITTEES, 1899-1900.

[The PRESIDENT is *ex-officio* Member of all Committees.]

AGRICULTURAL EDUCATION.

PAGET, RIGHT HON. SIR R. H., Bart., *Chairman*.

ACLAND, SIR C. T. D., Bart.	BEST, COL. G. GIBBONS, G.	KNOLLYS, C. R. LATHAM, T.
ALLEN, J. D.	GORING, REV. J.	MASKELYNE, N. STORY-
BAKER, G. E. LLOYD	HOBHOUSE, H. (M.P.)	SUTTON, M. J.

(With power to add to their number.)

ALLOTMENT.

BEST, CAPT. J. C., *Chairman*.

BEST, COL. G.	EDWARDS, C. L. F.	NAPIER, H. B.
BOTELER, CAPT. W. J. C.	GIBBONS, G.	SILLIFANT, A. O.

ARTS.

WYATT-EDGEELL, COL. A., *Vice-Chairman*.

ACLAND, SIR C. T. D., Bart.	DAW, R. R. M. FARWELL, F. G.	MOORE-STEVENS, J. C. MORRELL, G. H. (M.P.)
BATH, MARQUESS OF	HALL, J. F.	WILLIAMS, E. W.
CUNDALL, H. M. (F.S.A.)		

(With power to add to their number.)

CONTRACTS.

LLEWELLYN, E. H. (M.P.), *Chairman*.

BEST, CAPT. J. C.	EDWARDS, C. L. F.	NAPIER, H. B.
BOTELER, CAPT. W. J. C.	MASON, A.	NEVILLE-GRENVILLE, R.

DAIRY.

ACLAND, SIR C. T. D., Bart., *Chairman*.

ALLEN, J. D.	KNOLLYS, C. R.	NAPIER, H. B.
ASHCROFT, W.	LATHAM, T.	NEVILLE-GRENVILLE, R.
EDWARDS, C. L. F.	LLEWELLYN, E. H. (M.P.)	PAGET, RT. HON. SIR R. H., Bart.
FOWLER, W. H.	MASKELYNE, N. STORY-	WIPPELL, R.
GIBBONS, G.	MATHEWS, E.	
HALL, J. F.		

DISQUALIFYING.

THE STEWARDS OF HORSES. | THE STEWARDS OF STOCK.
THE STEWARD OF POULTRY.

EXPERIMENTS.

ACLAND, SIR C. T. D., Bart., *Chairman*.

ALLEN, J. D.	GIBBONS, G.	NEVILLE-GRENVILLE, R.
ASHCROFT, W.	GIBSON, J. T.	PAGET, RT. HON. SIR R. H., Bart.
BAKER, G. E. LLOYD-	HEYTESBURY, LORD	RAWLENCE, E. A.
DYKE, T.	KNOLLYS, C. R.	RUTHERFORD, J. A.
DRUCE, A. F. M.	LLEWELLYN, W. J.	SUTTON, M. J.
FARWELL, F. G.	MASKELYNE, N. STORY-	

(With power to add to their number.)

FINANCE.

	COLLINS, C. R., <i>Chairman.</i>	
DYKE, T.	|	MARTIN, G. E.

IMPLEMENT REGULATIONS.

	SHELLEY, SIR J., <i>Chairman.</i>	
, SIR C. T. D., Bart.	EDWARDS, C. L. F.	NAPIER, H. B.
CAPT. J. C.	GIBBONS, G.	NEVILLE-GRENVILLE, R.
ER, CAPT. W. J. C.	HEYTESBURY, LORD	RANSOME, J. E.
T.	MASON, A.	

JOURNAL.

	ACLAND, SIR C. T. D., Bart., <i>Chairman.</i>	
ED, F. W.	| FARWELL, F. G. |	MARTIN, G. E.
	MASKELYNE, N. STORY-	

JUDGES' SELECTION.

	BEST, COL. G., <i>Chairman.</i>	
, J. D.	HALL, J. F.	SILLIFANT, A. O.
, A. F. M.	MOORE-STEVENS, J. C.	WILLIAMS, E. W.
NS, G.	SHELLEY, SIR J., Bart	

RAILWAY ARRANGEMENTS AND ADVERTISEMENTS.

	BEST, CAPT. J. C., <i>Chairman.</i>	
RST, EARL	DRUCE, A. F. M.	MASON, A.
EARL OF	LLEWELLYN, E. H. (M.P.).	PHILLIPS, C. D.
TRY, EARL OF	LOPES, SIR M., Bart.	SHELLEY, SIR J., Bart.

(With power to add to their number.)

SELECTION.

THE CHAIRMEN OF ALL OTHER COMMITTEES.

SHOW DATES.

CHAIRMEN OF THE ALLOTMENT, DAIRY, FINANCE, IMPLEMENT REGULATIONS, RAILWAY ARRANGEMENTS, AND STOCK PRIZE-SHEET COMMITTEES, and THE STEWARD OF WORKS.

(With power to add two to their number.)

STOCK PRIZE-SHEET.

, J. D.	GIBBONS, G.	SHELLEY, SIR J., Bart.
SOFT, W.	HELYAR, COL.	SILLIFANT, A. O.
MARQUESS OF	HEYTESBURY, LORD	STANFORD, A.
COL. G.	LLEWELLYN, E. H. (M.P.)	VOSPER, W. P.
, A. F. M.	MOORE-STEVENS, J. C.	WILLIAMS, E. W.
ELL, F. G.		

Stewards.*Arts.*

CUNDALL, H. M. (F.S.A.)
 FARWELL, F. G.

Butter and Milk Tests.

LEWELLYN, E. H. (M.P.)

Cattle, Sheep and Pigs.

DRUCE, A. F. M.
 SILLIFANT, A. O.
 HEYTESBURY, LORD.

Cider.

FARWELL, F. G.

Dairy.

GIBBONS, G. KNOLLYS, C. R.

Assistant Dairy Steward (Milking).

LATHAM, T.

Dairy Schools.

GIBBONS, G.

Experiments.

ASHCROFT, W. DRUCE, A. F. M.

Farriery School.

BEST, COL. G.

Finance.

COLLINS, C. R. MARTIN, G. E.
 DYKE, T.

Horses.

WILLIAMS, E. W. BEST, COL. G.

Horticulture.

FOWLER, W. H.

Music.

CUNDALL, H. M. (F.S.A.)

Poultry.

ASHCROFT, W.

Shoeing.

LATHAM, T.

Works.

NAPIER, H. B.

Yard.

BEST, CAPT. J. G.
 EDWARDS, C. L. F.
 BOTELEER, CAPT. W. J. C.

Assistant Yard Steward.

MASON, A.

Other Honorary Officials.

Treasurer—BADOOCK, H. J.

Local Treasurer—DYMOND, F. W.

Consulting Surveyor—SPACKMAN, H.

Chaplain—QUIRK, REV. CANON.

Permanent Officials.

Secretary—PLOWMAN, THOMAS F.

Editor of 'Journal.' *Associate Editor.*

PLOWMAN, THOS. F. LLOYD, F. J. (F.I.C.)

Auditor.

GOODMAN, A. (*Chartered Accountant*)

Consulting Chemist.

VOELCKER, DR. J. A. (M.A., F.I.C.)

Consulting Botanist.

CARRUTHERS, W. (F.R.S.)

Veterinary Inspector.

BROWN, SIR G. T. (C.B.)

Superintendent of Works.

ROSSITER, J.

CHURCH SOCIETIES.

Year.	Place Visited.	Local Subscrip- tion.	Priest.			Total Local Contribu- tion.	President.	Admissions.		
			Local Com- mittee.	Local Societies.	Local Resi- dents.			On 2d. ed. days.	On 1st. Days.	Total.
1852	Taunton . . .	£ 210	..	£ ..	£ ..	210	Lord Portman.	..	..	..
1853	Plymouth . . .	450	..	..	..	450	Sir T. D. Acland, Bart.	..	..	..
1854	Bath . . .	450	..	..	..	450	William Miles, M.P.	..	..	..
1855	Tiverton . . .	450	..	..	..	450	Earl Fortescue	..	..	..
1856	Yeovil . . .	450	..	..	..	450	C. A. Moody, M.P.	..	..	..
1857	Newton Abbot . . .	700	..	..	..	700	Lord Courtenay	..	..	..
1858	Cardiff . . .	800	..	..	..	800	Lord Courtenay	..	..	..
1859	Barnstaple . . .	800	85	..	81	966	John Sillifant.	..	..	..
1860	Dorchester . . .	900	..	..	..	900	Lord Rivers	10,709	11,949	22,658
1861	Truro . . .	900	..	..	..	900	J. W. Buller, M.P.	15,201	14,220	29,421
1862	Wells . . .	900	..	..	..	900	Sir T. D. Acland, Bart.	10,578	4,775	15,353
1863	Exeter . . .	900	..	..	..	900	Marquis of Bath	15,635	19,284	34,919
1864	Bristol . . .	1000	106	..	50	1156	Earl Fortescue	22,377	65,678	88,055
1865	Hereford . . .	900	358	..	..	1258	Lord Taunton.	16,575	35,261	51,836
1866	Salisbury . . .	900	57	..	..	957	Earl of Portsmouth	7,288	18,737	26,025
1867	Salisbury . . .	..	..	..	..	..	J. Fremayne	7,501	16,702	24,204
1868	Falmouth . . .	900	..	..	..	900	Sir J. T. B. Duckworth, Bart.	11,393	19,495	30,888
1869	Southampton . . .	900	132	..	18	1050	Earl of Carnarvon	15,340	41,290	56,630
1870	Taunton . . .	900	..	..	..	900	Sir S. H. Northcote, Bart., C.B., M.P.	17,951	33,658	51,605
1871	Guildford . . .	900	110	..	..	1010	Earl of Cork	10,656	23,406	34,062
1872	Dorchester . . .	800	..	..	10	810	Duke of Marlborough, K.G.	12,791	21,517	34,308
1873	Plymouth . . .	800	..	400	..	1200	Earl of Mount-Edgumbe	16,665	45,744	62,409
1874	Bristol . . .	800	403	..	..	1203	Sir Massey Lopes, Bart., M.P.	37,329	72,791	110,120

ANNUAL EXHIBITIONS—continued.

Year.	Place Visited.	Prizes.				President.	Admissions.		Total.
		Local Subscription.	Local Com-mittee.	Local Societies.	Local Rec-idents.		On 2d. days.	On 1d. Days.	
1875	Croydon.	£ 800	£ 245	£ ..	£ ..	R. Benyon, M.P.	14,518	26,028	40,546
1876	Hereford	800	381	..	..	Earl of Ducie	16,396	32,645	49,041
1877	Bath	800	215	..	..	Marquis of Lansdowne	27,625	48,852	76,477
1878	Oxford	800	..	170	6	Earl of Jersey.	12,414	26,995	39,409
1879	Exeter	800	..	..	10	Earl of Morley	14,634	40,533	55,167
1880	Worcester	800	..	254	..	Earl of Coventry	8,415	37,675	46,090
1881	Tunbridge Wells	800	245	34	..	Marquess of Abergavenny	13,368	33,236	46,604
1882	Cardiff	800	200	198	17	Lord Tredegar	23,941	38,690	62,621
1883	Bridgwater	800	78	..	..	Lord Brooke, M.P.	17,171	31,241	48,412
1884	Maidstone	800	310	33	75	Viscount Holmesdale.	13,501	31,053	44,554
1885	Brighton	800	227	33	82	Viscount Hampden	9,637	39,851	49,488
1886	Bristol	800	525	..	..	Lord Carlisle	29,580	70,999	100,579
1887	Dorchester	800	..	112	..	Earl of Ilchester	8,860	29,846	38,706
1888	Newport (Mon.)	800	100	..	..	Lord Tredegar	14,878	38,567	53,445
1889	Exeter	800	..	..	10	Lord Clinton	16,405	36,195	52,600
1890	Rochester	800	294	..	26	Earl of Darnley	3,480	48,314	51,794
1891	Bath	800	50	103	100	Earl Temple	23,510	52,185	75,695
1892	Swansea	800	200	100	10	Sir J. T. D. Llewelyn, Bart.	18,364	54,604	72,973
1893	Gloucester	800	400	..	..	Lord Fitzhardinge	14,272	40,368	54,640
1894	Guildford	800	174	..	10	Earl of Onslow	8,671	26,813	35,484
1895	Taunton	800	85	160	10	Viscount Portman	13,181	30,111	43,292
1896	St. Albans	800	152	..	..	Earl of Clarendon	12,056	22,380	34,436
1897	Southampton	800	50	..	..	Lord Monagu of Beaulieu	8,284	33,750	42,034
1898	Cardiff	800	200	..	..	Lord Windsor.	13,101	42,501	55,602
1899	Exeter	800	..	225	5	Lord Clinton	16,091	39,832	55,923
1900	Bath	800	100	160	10	Marquess of Bath	..	..	..

Members' Privileges.

EXAMINATION OF PLANTS AND SEEDS.

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Examination of Plants and Seeds, to state that they do so as Members of the first-named Society.

THE Council have arranged for the following rates of charge for the examination, by the Society's Consulting Botanist, of Plants and Seeds for the *bona fide* and individual information and benefit of Members of the Society (not being seedsmen). The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

No.

- | | |
|--|-----|
| 1.—A report on the purity and germinating power of a sample of seed, stating the sorts and amount of any other seeds found therein | 1s. |
| 2.—Determination of the species of any weed or other plant, or of any epiphyte or vegetable parasite, with a report on its habits, and the means for its extermination or prevention | 1s. |
| 3.—Report on any disease affecting farm crops | 1s. |
| 4.—Determination of the species of a collection of natural grasses found in any district, with a report on their habits and pasture value | 5s. |

N.B.—The Consulting Botanist's Reports on Seeds are furnished to enable Members,—purchasers of seeds and corn for Agricultural or Horticultural purposes,—to test the value of what they buy, and not to be used or made available for advertising or trade purposes.

PURCHASE OF SEEDS.

The purchaser should obtain from the vendor, by invoice or otherwise, a proper designation of the seed he buys, with a guarantee that it contains not more than a specified amount of other seeds, and is free from ergot, or, in the case of clovers, from dodder, and of the percentage of seeds that will germinate.

The germination of cereals, green crops, clover, and timothy grass should be not less than 90 per cent.; of fox-tail not less than 60 per cent.; of other grasses not less than 70 per cent.

The Council strongly recommend that the purchase of prepared mixtures should be avoided, and that the different seeds to be sown should be purchased separately.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES.

I. SEEDS.

In sending seed or corn for examination the utmost care must be taken to secure a fair and honest sample. In the case of grass-seeds the sample should be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser and not from the purchase sample. When bought by sample, the whole or part of that sample should also be sent.

When it is considered necessary to secure legal evidence, the sample should be taken from the bulk and placed in a sealed bag in the presence of a reliable witness who is acquainted with the identity of the bulk, and care should be taken that the purchased sample and bulk be not tampered with after delivery, or mixed or come in contact with any other sample or stock.

One ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought should be sent with it.

Grass-seeds should be sent at least FOUR WEEKS, and clover-seeds TWO WEEKS before they are required, and they should not be sown until the report has been received.

II. PLANTS.

In collecting specimens of plants, the whole plant should be taken up, and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage prepaid) must be addressed to Mr. W. CARRUTHERS, F.R.S., 43, Central Hill, Norwood, London, S.E.

Members' Privileges.

ANALYSES OF FERTILISERS, FEEDING-STUFFS, WATERS, SOILS, &c.

Applicable only to the case of Persons who are not commercially engaged in the manufacture or sale of any substance sent for Analysis.)

Members of the Bath and West and Southern Counties Society, who may also be Members of other Agricultural Societies, are particularly requested, in applying for Analyses, to state that they do so as Members of the first-named Society.

The Council have fixed the following rates of Charges for Chemical Analyses to Members of the Society.

These privileges are applicable only when the Analyses are for *bonâ-fide* agricultural purposes, and are required by Members of the Society for their own use and guidance in respect of farms or land in their own occupation and within the United Kingdom.

The analyses are given on the understanding that they are required for the individual and sole benefit of the Member applying for them, and must not be used for other persons, or for commercial purposes.

Land or estate agents, bailiffs, and others, when forwarding samples, are required to state the names of those Members on whose behalf they apply.

Members are also allowed to send for analysis under these privileges any manures or feeding-stuffs to be used by their outgoing tenants, or which are to be given free of cost to their occupying tenants.

The analyses and reports may not be communicated to either vendor or manufacturer, except in cases of dispute.

Members are requested, when applying for an analysis, to quote the number in the subjoined schedule under which they wish it to be made.

No.		
1.	An opinion of the purity of bone-dust or oil-cake (each sample)	2s. 6d.
2.	An analysis of sulphate or muriate of ammonia, or of nitrate of soda, together with an opinion as to whether it be worth the price charged	5s.
3.	An analysis of guano; showing the proportion of moisture, organic matter, sand, phosphate of lime, alkaline salts and ammonia, together with an opinion as to whether it be worth the price charged	10s.
4.	An analysis of mineral superphosphate of lime for soluble phosphates only, together with an opinion as to whether it be worth the price charged	5s.
5.	An analysis of superphosphate of lime, dissolved bones, &c., showing the proportions of moisture, organic matter, sand, soluble and insoluble phosphates, sulphate of lime, and ammonia, together with an opinion as to whether it be worth the price charged	10s.
6.	An analysis of bone-dust, basic slag, or any other ordinary artificial manure, together with an opinion as to whether it be worth the price charged	10s.
7.	An analysis of compound artificial manures, animal products, refuse substances used for manure, &c.	from 10s. to 21
8.	An analysis of limestone, showing the proportion of lime	7s. 6d.
9.	An analysis of limestone, showing the proportion of lime and magnesia	10s.
10.	An analysis of limestone or marl, showing the proportion of carbonate, phosphate, and sulphate of lime and magnesia, with sand and clay	10s.
11.	Partial analysis of a soil, including determinations of clay, sand, organic matter, and carbonate of lime	10s.
12.	Complete analysis of a soil	2s.
13.	An analysis of oil-cake or other substance used for feeding purposes, showing the proportion of moisture, oil, mineral matter, albuminous matter, and woody fibre, as well as of starch, gum, and sugar in the aggregate; and an opinion of its feeding and fattening or milk-producing properties	10s.
14.	Analysis of any vegetable product	10s.
15.	Determination of the "hardness" of a sample of water before and after boiling	5s.
16.	Analysis of water of land-drainage, and of water used for irrigation	2s.
17.	Analysis of water used for domestic purposes	2s. 10s.
18.	An analysis of milk (to assist Members in the management of their Dairies and Herds, <i>bonâ-fide</i> for their own information and not for trade purposes, nor for use in connection with the Sale of Food and Drugs Acts)	5s.
19.	Personal consultation with the Consulting Chemist. (To prevent disappointment it is suggested that Members desiring to hold a consultation with the Consulting Chemist should write to make an appointment)	5s.
20.	Consultation by letter	5s.
21.	Consultation necessitating the writing of three or more letters	10s.

Members wishing to exercise their privileges on the above-named terms, should forward their samples for examination, *by post or parcel, prepaid*, to the Consulting Chemist, Dr. JOHN AUGUSTUS VOELCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C.

The fees for analysis must be sent to the Consulting Chemist at the time of application.

GUIDE TO PURCHASERS OF FERTILISERS AND FEEDING-STUFFS.

UNDER the provisions of the Fertilisers and Feeding Stuffs Act of 1893, District Agricultural Analysts have been appointed throughout the country to examine samples taken in compliance with the Act. Inasmuch, however, as the procedure necessitated in these cases is very complicated, Members of the Bath and Southern Counties Society will find it much simpler to avail themselves of the privileges afforded by the Society, and will be able to protect themselves both amply and with far less trouble, by making their purchases in accordance with the following directions, and by stipulating that purchases shall be subject to the analysis and report of the Society's Consulting Chemist.

Purchasers are recommended in every case to insist upon having an Invoice given to them. This invoice should set out clearly :—

In the case of **Fertilisers**—

- (1.) the name of the fertiliser ;
- (2.) whether the fertiliser be artificially compounded or not ;
- (3.) the minimum analysis guaranteed in respect of the principal fertilising ingredients.

In the case of **Feeding-Stuffs**—

- (1.) the name of the article ;
- (2.) the description of the article : whether it has been made from a substance or seed only, or from more than one.

(NOTE.—The use of the terms "Linseed-cake," "Cotton-cake," &c., imply that these cakes shall be "pure," and purchasers are recommended to insist upon these terms being used without any qualification such as "95 per cent.," "as imported," &c. "Oil-cake" should be avoided. Mixed feeding-cakes and meals should be only purchased with guaranteed analysis.)

Members of the Society should see that the Invoices agree accurately with the orders given by them, and, in giving these orders, they should stipulate that the goods come up to the guarantees set out in the following list, and that they be sold subject to the analysis and report of the Consulting Chemist of the Bath and Southern Counties Society.

FERTILISERS.

Raw Bones, Bone-meal, or Bone-dust to be guaranteed "PURE," and to contain not less than 45 per cent. of Phosphate of Lime, and not less than 4 per cent. Ammonia.

Steamed or "Degelatinised" Bones to be guaranteed "PURE," and to contain not less than 55 per cent. of Phosphate of Lime, and not less than 1 per cent. Ammonia.

Mineral Superphosphate of Lime to be guaranteed to contain a certain percentage of "Soluble Phosphate." [From 25 to 28 per cent. of Soluble Phosphate is an ordinarily good quality.]

Dissolved Bones to be guaranteed to be "made from raw bone and acid only," and to be sold as containing stated minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia.

Compound Artificial Manures, Bone Manures, Bone Compounds, &c., to be sold by analysis stating the minimum percentages of Soluble Phosphate, Insoluble Phosphates, and Ammonia contained.

Basic Slag to be guaranteed to contain a certain percentage of Phosphoric Acid, and to be sufficiently finely ground that 80 to 90 per cent. passes through a sieve having 10,000 meshes to the square inch.

Peruvian Guano to be described by that name, and to be sold by analysis stating the minimum percentages of Phosphates and Ammonia.

Sulphate of Ammonia to be guaranteed to be "PURE," and to contain not less than 24 per cent. of Ammonia.

Nitrate of Soda to be guaranteed to be "PURE" and to contain 95 per cent. of Nitrate of Soda.

Kainit to be guaranteed to contain 23 per cent. of Sulphate of Potash.

All Fertilisers to be delivered in good and suitable condition for sowing.

FEEDING-STUFFS.

Linseed Cake, Cotton Cake (Decorticated and Undecorticated), and **Rape Cake** (for feeding purposes) to be pure, i.e. prepared *only* from the one kind of seed from which their name is derived, and to be in sound condition. The report of the Consulting Chemist of the Bath and West and Southern Counties Society to be conclusive as to the "purity" or otherwise of any feeding-stuffs.

Mixed Feeding Cakes, Meals, &c., to be sold on a guaranteed analysis.

All Feeding-Stuffs to be sold in sound condition, and to contain nothing of an injurious nature, or worthless for feeding purposes.

INSTRUCTIONS FOR SELECTING AND SENDING SAMPLES FOR ANALYSIS.

GENERAL RULES.

1.—A sample taken for analysis should be fairly *representative* of the bulk from which it has been drawn.

2.—The sample should reach the Analyst *in the same condition* as it was at the time when drawn.

FERTILISERS.

When **Fertilisers** are delivered in bags, select four or five of these from the bulk, and either turn them out on a floor and rapidly mix their contents, or else drive a shovel into each bag and draw out from as near the centre as possible a couple of shovelfuls of the manure, and mix these quickly on a floor.

Halve the heap obtained in either of these ways, take one-half (rejecting the other) and mix again rapidly, flattening down with the shovel any lumps that appear. Repeat this operation until at last only some three or four pounds are left.

From this fill three tins, holding from $\frac{1}{2}$ -lb. to 1-lb. each, mark, fasten up and seal each of these. Send one for analysis, and retain the others for reference.

Or,—the manure may be put into glass bottles provided with well-fitting corks; the bottles should be labelled and the corks sealed down. The sample sent for analysis can be packed in a wooden box and sent by post or rail.

When manures are delivered in bulk, portions should be *successively drawn* from *different parts* of the bulk, the heap being turned over now and again. The portions drawn should be thoroughly mixed, sub-divided, and, finally, samples should be taken as before, except that when the manure is coarse and bulky it is advisable to send larger samples than when it is in a finely-divided condition.

FEEDING-STUFFS.

Linseed, Cotton, and other Feeding Cakes.—If a single cake be taken, three strips should be broken off right across the cake and from the middle portion of it, one piece to be sent for analysis, and the other two retained for reference. Each of the three pieces should be marked, wrapped in paper, fastened up and sealed. The piece forwarded for analysis can be sent by post or rail.

A more satisfactory plan is to select four to six cakes from *different parts* of

the delivery, then break off a piece about four inches wide from the middle of each cake, and pass these pieces through a cake breaker. The broken cake should then be well mixed, and three samples of about 1 lb. each should be taken and put in tins or bags duly marked, fastened, and sealed as before. One of these lots should be sent for analysis, the remaining two being kept for reference. It is advisable, also, with the broken pieces to send a small strip from an unbroken cake.

Feeding Meals, Grain, &c.—Handfuls should be drawn from the centre of half-a-dozen different bags of the delivery; these lots should then be well mixed, and three $\frac{1}{2}$ -lb. tins or bags filled from the heap, each being marked, fastened up, and sealed. One sample is to be forwarded for analysis and the others retained for reference.

SOILS, WATERS, &c.

Soils.—Have a wooden box made 6 inches in length and width, and from 9 to 12 inches deep, according to the depth of soil and subsoil of the field. Mark out in the field a space of about 12 inches square; dig round in a slanting direction a trench, so as to leave undisturbed a block of soil and its subsoil 9 to 12 inches deep; trim this block to make it fit into the wooden box, invert the open box over it, press down firmly, then pass a spade under the box and lift it up, gently turn over the box, nail on the lid, and send by rail. The soil will then be received in the position in which it is found in the field.

In the case of very light, sandy, and porous soils, the wooden box may be at once inverted over the soil and forced down by pressure, and then dug out.

Waters.—Samples of water are best sent in glass-stoppered Winchester bottles, holding half-a-gallon. One such bottle is sufficient for a single sample. Care should be taken to have these scrupulously clean. In taking a sample of water for analysis it is advisable to reject the first portion drawn or pumped, so as to obtain a sample of the water when in ordinary flow. The bottle should be rinsed out with the water that is to be analysed, and it should be filled nearly to the top. The stopper should be secured with string, or be tied over with linen or soft leather. The sample can then be sent carefully packed either in a wooden box with sawdust, &c., or in a hamper with straw.

Milk.—A pint bottle should be sent in a wooden box.

GENERAL INSTRUCTIONS.

Time for Taking Samples.—All samples, both of fertilisers and feeding-stuffs, should be taken as soon after their delivery as possible, and should reach the Analyst within *ten days* after delivery of the article. In every case it is advisable that the Analyst's certificate be received before a fertiliser is sown or a feeding-stuff is given to stock.

Procedure in the Event of the Vendor wishing Fresh Samples to be Drawn.—Should a purchaser find that the Analyst's certificate shows a fertiliser or feeding-stuff not to come up to the guarantee given him, he may inform the vendor of the result and complain accordingly. He should then send to the vendor *one* of the two samples which he has kept for reference. If, however, the vendor should demand that a fresh sample be drawn, the purchaser must allow this, and also give the vendor an opportunity of being present, either in person or through a representative whom he may appoint. In that case, three samples should be taken in the presence of both parties with the same precautions as before described, *each* of which should be duly packed up, labelled, and sealed by both parties. One of these is to be given to the vendor, one is to be sent to the Analyst, and the third is to be kept by the purchaser for reference or future analysis if necessary.

All samples intended for the Consulting Chemist of the Society should be addressed (postage or carriage prepaid) to Dr. J. AUGUSTUS VOELCKER, M.A., F.I.C., 22, Tudor Street, New Bridge Street, London, E.C. Separate letters of instruction should be sent at the same time.

BATH MEETING,

MAY 30, 31, JUNE 1, 2, AND 4, 1900.

MONEY PRIZES.

	£	s.	d.	PAGE
HORSES	877	0	0	lxxxvii
CATTLE	1,206	10	0	xc
SHEEP	428	0	0	xciv
PIGS	205	0	0	xcvi
CHEESE	113	0	0	xcvii
BUTTER AND CREAM	59	10	0	xcvii
BUTTER-MAKING	72	0	0	xcviii
MILKING	11	5	0	xcix
SHOEING	33	0	0	xcix
POULTRY	169	10	0	cviii
Total	£3,174	15	0	

DONORS OF MONEY PRIZES.

	£	s.	d.
Bath and West and Southern Counties Society	2,802	5	0
Somerset County Agricultural Association ..	100	0	0
Bath Local Committee	100	0	0
Red Polled Cattle Society	45	0	0
Somerset County Council	39	0	0
English Jersey Cattle Society	31	0	0
Shorthorn Society	20	0	0
Kerry and Dexter Cattle Society	10	10	0
Captain J. C. Best, R.N. (Poultry)	10	0	0
Colonel Helyar	10	0	0
British Berkshire Society	5	0	0
English Guernsey Cattle Society	2	0	0
	£3,174	15	0

DONORS OF MEDALS AND PLATE.

In addition to the Money Prizes, there are offered :—

A GOLD MEDAL, in the Shire Horse Classes, by the Shire Horse Society.

A GOLD and 2 SILVER MEDALS, in the Hunter Classes, by the Hunters Improvement Society.

Two GOLD MEDALS, in the Hackney, Pony, and Harness Classes, by the Hackney Horse Society.

A CHALLENGE SILVER BOWL, in the Jersey Classes, by Sir James Blyth, Bart.

A CHALLENGE CUP, value 25 Guineas, in the Jersey Classes, by His Grace the Duke of Marlborough.

A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter Test Classes, by the English Jersey Cattle Society.

A SILVER CUP, and a SILVER, and a BRONZE MEDAL, in the Guernsey Butter Test Class, by the English Guernsey Cattle Society.

TWO SILVER MEDALS, in the Southdown Sheep Classes, by the Southdown Sheep Society.

TWO GOLD MEDALS, in the Pig Classes, by the National Pig Breeders' Association.

A GOLD MEDAL, and 16 SILVER, and 16 BRONZE MEDALS, in the Cider Classes, by the Society.

A GOLD MEDAL, in the Cheese Classes, by the Somerset County Council.

A GOLD, a SILVER, and a BRONZE MEDAL, in the Butter-Making Classes, by the Society.

PRIZES.

HORSES.	First Prize.	Second Prize.	Third Prize.
	£	£	£
<i>Animal can be entered in as many Classes as it is gible for on payment of an additional fee in each ass. No additional fee is, however, payable in the case of Champion or Special Prizes for exhibits already entered in a Class.</i>			
SHIRE.			
Registered or eligible for registration in the Shire Horse Society's Stud Book.)			
—STALLION, foaled before 1898	20	10	5
—STALLION, foaled in 1898	20	10	5
—COLT, foaled in 1899	15	10	5
—MARE and FOAL, or in-FOAL	20	10	5
—FILLY or GELDING, foaled in 1897	10	5	3
—FILLY or GELDING, foaled in 1898	10	5	3
—FILLY or GELDING, foaled in 1899	10	5	3
Offered by the Shire Horse Society, a Gold Medal, value £10, for Best MARE or FILLY in Class 4, 5, 6, or 7, under Conditions 46, stated on page civ.			
NY OTHER AGRICULTURAL BREED.			
—MARE and FOAL, or in-FOAL	15	10	5
—FILLY or GELDING, foaled in 1897	10	5	3
—FILLY or GELDING, foaled in 1898	10	5	3

HORSES— <i>continued</i> .		First Prize.	Second Prize.	Third Prize.
CHAMPION PRIZES.		£	£	£
(Offered by the Somerset County Agricultural Association.)				
<i>Best Stallion in Class 1 or 2</i>		10		
<i>Best Mare in Class 4 or 8</i>		10		
CLASS	HUNTERS.			
11.—MARE and FOAL, or in-FOAL		20	10	5
12.—MARE or GELDING, foaled in 1894, 1895, or 1896, to carry 13 stone.				
13.—MARE or GELDING, foaled in 1894, 1895, or 1896, to carry over 13 stone and up to 14 stone 7 lbs.				
14.—MARE or GELDING, foaled in 1894, 1895, or 1896, to carry over 14 stone 7 lbs.				
The three Best Animals in each of the Classes 12, 13, and 14 will be subsequently judged together, when the following Prizes will be awarded		50	20	10
(Of these amounts £40 is offered by the Somerset County Agricultural Association; £10 by Colonel Helyar, Poundesford Lodge, Taunton; and £30 by the Society.)				
15.—MARE or GELDING, foaled in 1896		20	10	5
16.—FILLY or GELDING, foaled in 1897		15	10	5
17.—FILLY or GELDING, foaled in 1898		10	7	3
18.—FILLY, COLT, or GELDING, foaled in 1899		10	7	3
SPECIAL PRIZES.				
(Offered by the Hunters' Improvement Society.)				
A Gold Medal, or £5 and a Bronze Medal, for the Best HUNTER BROOD MARE in Class 11, in-foal to, or with foal at-foot by, a Thoroughbred Horse or Registered Hunter Sire not having previously won the Hunters' Improvement Society's Gold Medal or Premium as a Brood Mare, under Conditions 47, stated on page civ.				
A Silver Medal, for the Best HUNTER FILLY by a Thoroughbred Horse or Registered Hunter Sire, in Class 16, 17, or 18, not exceeding three years old (foaled in 1897, 1898, or 1899), under Conditions 48, stated on page civ.				
A Silver Medal, for the Best HUNTER of either Sex and of any Age, got by a Premium or Silver Medal Stallion out of a Registered Mare or a Mare qualified for Registration in vol. ix., or by a Registered Hunter Sire out of a Registered Mare, or a Mare qualified for Registration in vol. ix., and not having previously won a corresponding Medal during 1900, under Conditions 49, stated on page cv.				

HORSES— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
		£	£	£
HACKNEYS.				
(Registered or eligible for registration in the Hackney Horse Society's Stud Book.)				
CLASS				
19.—MARE and FOAL, or in-FOAL	15	10	5	
20.—MARE or GELDING, foaled before 1896	10	5	3	
21.—MARE or GELDING, foaled in 1896 or 1897	10	5	3	
22.—FILLY or GELDING, foaled in 1898	10	5	3	
23.—FILLY, COLT, or GELDING, foaled in 1899	10	5	3	
PONIES.				
4.—MARE or GELDING, 4 years old or over, exceeding 13 and not exceeding 14·2 hands	10	5	3	
5.—MARE or GELDING, 4 years old or over, not exceeding 13 hands	10	5	3	
6.— <i>Mare or Gelding, not exceeding 14·2 hands, the property of a resident within a radius of 8 miles from the Guildhall, Bath</i>	8	5	3	
SPECIAL PRIZES.				
(Offered by the Hackney Horse Society.)				
A Gold Medal (value £10) for the Best MARE or FILLY exhibited in Classes 19 to 26, under Conditions 50, stated on page cv.				
HARNESSES.				
Horses entered in the Hackney or Pony Classes can, if eligible, be also entered, on payment of an additional fee, in the Harness Classes.				
Horses entered in the Double Harness and Tandem Classes can also be entered, on payment of an additional fee, in the Single Harness Classes.				
Horses entered in the Harness Classes only must be in the Show Yard by 2 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as the Class has been judged.				
27.—MARE or GELDING, 15 hands or over, to be driven in harness on the 2nd day of Show	8	4	2	
28.—PAIR of CARRIAGE HORSES (Mares or Geldings), 15 hands or over, to be driven in double harness on the 2nd day of Show	15	5	2	
29.—TANDEMS (Mares or Geldings), 15 hands or over, to be driven in harness on the 2nd day of Show	15	5	2	
30.—MARE or GELDING, over 14 and under 15 hands, to be driven in harness on the 3rd day of Show	8	4	2	
31.—PAIR of HORSES (Mares or Geldings), over 14 and under 15 hands, to be driven in double harness on the 3rd day of Show	15	5	2	

* The Prizes in the Class marked with an asterisk (*) are offered by the Bath Local Committee.

HORSES— <i>continued</i> .		First Prize.	Second Prize.	Third Prize.
CLASS				
32.—TANDEMS (Mares or Geldings), over 14 and under 15 hands, to be driven in harness on the 3rd day of Show		£ 15	£ 5	£ 2
33.—MARE or GELDING, over 13 and not over 14 hands, to be driven in harness on the 4th day of Show		8	4	2
*34.—Pair of Carriage Horses (Mares or Geldings) not over 14 hands, to be driven in double harness, on the 4th day of Show		15	5	2
*35.—Tandems (Mares or Geldings) not over 14 hands, to be driven in harness, on the 4th day of Show		15	5	2
*36.—Dray or Cart Mare or Gelding, suitable for and having been worked by a Bath brewer, builder, timber merchant, tradesman or haulier, or the Corporation, for a period of not less than three months prior to the date of the Show. To be exhibited, with gear, on the 4th day of Show		5	3	2
37.—MARE or GELDING, not over 13 hands, to be driven in harness on the 5th day of Show		8	4	2
*38.—Light Mare or Gelding, bona fide the property of a tradesman or firm carrying on business within the Parliamentary Borough of Bath, which has been regularly used for the purpose of his business for at least three months immediately prior to the 1st day of May, 1900. The general turn out will be taken into consideration. To be exhibited, in trade cart and harness, on the 5th day of Show		5	3	2
*39.—Mare or Gelding, over 14 hands, bona fide the property of a resident within a radius of 8 miles from the Guildhall, Bath, and that has been such for not less than three months prior to the date of the Show. To be driven in harness on the 5th day of Show		5	3	2
*40.—Mare or Gelding, not over 14 hands, bona fide the property of a resident within a radius of 8 miles from the Guildhall, Bath, and that has been such for not less than three months prior to the date of the Show. To be driven in harness on the 5th day of Show		5	3	2
40a.—A Gold Medal (value £5), is offered by the Hackney Horse Society, for the Best MARE or GELDING not less than 15.2 hands, exhibited in the Harness Classes in single harness, subject to Conditions 51, stated on page cv. There is no entry fee in this Class. Animals entered to compete must be in the Show Yard by 2 p.m. on the 5th day of Show.				

* The Prizes in the Classes marked with an asterisk (*) are offered by the Bath Local Committee.

CATTLE.			
	First Prize.	Second Prize.	Third Prize.
	£	£	£
DEVON.			
1888			
—BULL, calved in 1896 or 1897	15	10	5
—BULL, calved in 1898	15	10	5
—BULL, calved in 1899	10	5	2
—Cow, in-Milk, calved before 1897	15	10	5
—HEIFER, in-Milk, calved in 1897	10	5	2
—HEIFER, calved in 1898	10	5	2
—HEIFER, calved in 1899	10	5	2
CHAMPION PRIZES.			
Offered by the Somerset County Agricultural Association.)			
Best Bull in Class 41, 42 or 43	10		
Best Cow or Heifer in Class 44, 45, 46 or 47	10		
SHORT-HORN.			
—BULL, calved in 1896 or 1897	15	10	5
—BULL, calved in 1898	15	10	5
—BULL, calved in 1899	10	5	2
—Cow, in-Milk, calved before 1897	15	10	5
Animal entered in Class 51 can, if eligible, be also entered, on payment of an additional fee, in Class 52.)			
The First Prize in Class 52 is offered by the Short-Horn Society.			
Pure Short-Horn Cow, in-Milk, of any age, eligible for and entered in, Coate's Herd Book (or pedigree sent for such entry before the Show), that has not previously won a First Prize offered by the Short-Horn Society in a corresponding Class			
	10	5	
—HEIFER, in-Milk, calved in 1897	10	5	2
—HEIFER, calved in 1898	10	5	2
—HEIFER, calved in 1899	10	5	2
CHAMPION PRIZE.			
(Offered by the Short-Horn Society.)			
Best Bull in Class 48, 49 or 50, entered in or eligible for Coate's Herd Book	10		
HEREFORD.			
—BULL, calved in 1896 or 1897	15	10	5
—BULL, calved in 1898	15	10	5
—BULL, calved in 1899	10	5	2
—Cow, in-Milk, calved before 1897	15	10	5
—HEIFER, in-Milk, calved in 1897	10	5	2
—HEIFER, calved in 1898	10	5	2
—HEIFER, calved in 1899	10	5	2

CATTLE—continued.		First Prize.	Second Prize.	Third Prize.
CLASS	SUSSEX.	£	£	£
63.—BULL, calved in 1896 or 1897		15	10	5
64.—BULL, calved in 1898 or 1899		15	10	5
65.—COW or HEIFER, in-Milk, calved in or before 1897		15	10	5
66.—HEIFER, calved in 1898		10	5	2
67.—HEIFER, calved in 1899		10	5	2
RED POLLED.				
<i>(The First Prizes in Classes 68, 69 and 70 are offered by the Red Polled Cattle Society.)</i>				
68.—BULL, calved in 1898 or 1899		15	10	5
69.—COW or HEIFER, in-Milk, calved in or before 1897		15	10	5
70.—HEIFER, calved in 1898 or 1899		15	10	5
JERSEY.				
71.—BULL, calved in 1896 or 1897		15	10	5
72.—BULL, calved in 1898		15	10	5
73.—BULL, calved in 1899		10	5	2
74.—COW, in-Milk, calved before 1897		15	10	5
75.—HEIFER, in-Milk, calved in 1897		10	5	2
76.—HEIFER, calved in 1898		10	5	2
77.—HEIFER, calved in 1899		10	5	2
SPECIAL PRIZES.				
<i>(Offered by Sir James Blyth, Bart.)</i>				
The Blythwood Challenge Silver Bowl, weighing 25 ounces, for the Best Cow or Heifer in-Milk, in any of the Jersey Classes, bred in Great Britain or Ireland, to be awarded by inspection (see Special Conditions 60 on page cvi.).				
<i>(Offered by His Grace the Duke of Marlborough.)</i>				
A Challenge Cup, value 25 guineas, for the Best Bull, not exceeding 18 months old, Cow of any age in-Milk, and Heifer her produce in-Milk, in any of the Jersey Classes, the property of one Exhibitor (see Special Conditions 61 on page cvi.).				
GUERNSEY.				
78.—BULL, calved in 1896 or 1897		15	10	5
79.—BULL, calved in 1898		15	10	5
80.—BULL, calved in 1899		10	5	2
81.—COW, in-Milk, calved before 1897		15	10	5
82.—HEIFER, in-Milk, calved in 1897		10	5	2
83.—HEIFER, calved in 1898		10	5	2
84.—HEIFER, calved in 1899		10	5	2

CATTLE— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
LASS	KERRY.	£ s.	£	£
85.—BULL, calved in 1897, 1898, or 1899		7	5	2
86.—COW or HEIFER, in-Milk, calved in or before 1897		7	5	2
87.—HEIFER, calved in 1898 or 1899		7	5	2
SPECIAL PRIZE.				
(Offered by the Kerry and Dexter Cattle Society.)				
Best Animal in Class 85, 86, or 87		5 5		
DEXTER KERRY.				
88.—BULL, calved in 1897, 1898, or 1899		7	5	2
89.—COW or HEIFER, in-Milk, calved in or before 1897		7	5	2
90.—HEIFER, calved in 1898 or 1899		7	5	2
SPECIAL PRIZE.				
(Offered by the Kerry and Dexter Cattle Society.)				
Best Animal in Class 88, 89, or 90		5 5		
DAIRY.				
<i>Animals entered in the Breed Classes can, if eligible, be entered also, on payment of an additional fee, in the Classes 91 to 95 inclusive.</i>				
91.—Cow, in-Milk, of any breed or cross, under 900 lbs. live weight, yielding the largest quantity of Milk, of normal character, containing, on the average, of the two competitive milkings, 12·25 per cent. of total solids, of which not less than 3·25 per cent. shall be fat, the period of lactation being taken into consideration		10	3	2
92.—Cow, in-Milk, of any breed or cross, 900 lbs. live weight or over ditto ditto		10	3	2
BUTTER TEST.				
The Prizes in Classes 93 and 94 are offered by the English Jersey Cattle Society, and Entries in them are subject to any conditions issued by that Society previous to the Tests.				
93.—Cow, of any breed or cross, under 900 lbs. live weight, obtaining the greatest number of points by the practical Test of the Separator and Churn, judged by the scale of points adopted by the English Jersey Cattle Society		10	3	2

CATTLE— <i>continued.</i>			
CLASS	First Prize.	Second Prize.	Third Prize.
94.—Cow of any breed or cross, 900 lbs. live weight and over ditto ditto	£ 10	£ 3	£ 2
Gold, Silver, and Bronze Medals are offered for the three Jersey Cows, entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the Test.			
SPECIAL PRIZE.			
For the best quality of Butter produced by any Jersey Cow awarded a Medal, Prize, or Certificate of Merit in Class 93 or 94	1		
(The Prizes in Class 95 are offered by the English Guernsey Cattle Society.)			
95. Cow or Heifer, entered in the English Guernsey Cattle Society's Herd Book, or eligible for entry therein, obtaining the greatest number of points by the practical Test of the Churn, the points to be reckoned on the weight of Butter and an allowance for lactation to be made under the scale settled by the English Guernsey Society.			
1st Prize, Silver Cup, value £5.			
2nd „ Silver Medal and 20s.	1		
3rd „ Bronze Medal and 20s.	1		
S H E E P.			
COTSWOLD.			
96.—Shearling RAM	10	5	2
97.—Pair of RAM LAMBS, dropped in 1900	10	5	2
98.—Pen of three Shearling Ewes	10	5	2
DEVON LONG-WOOLLED.			
99.—Shearling RAM	10	5	2
100.—Pair of RAM LAMBS, dropped in 1900	10	5	2
101.—Pen of three Shearling Ewes	10	5	2
CHAMPION PRIZE.			
(Offered by the Somerset County Agricultural Association.)			
Best Ram or Ram Lamb in Class 99 or 100	7		

SHEEP— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.
CLASS	SOUTHDOWN.	£	£	£
12.—	Shearling RAM	10	5	2
13.—	Pair of RAM LAMBS, dropped in 1900	10	5	2
14.—	Pen of three Shearling EWES	10	5	2
SPECIAL PRIZES.				
(Offered by the Southdown Sheep Society.)				
A Silver Medal for the Best Ram or Ram Lamb in Class 102 or 103.				
A Silver Medal for the Best Pen of Ewes in Class 104.				
HAMPSHIRE DOWN.				
15.—	Shearling RAM	10	5	2
16.—	Pair of RAM LAMBS, dropped in 1900	10	5	2
17.—	Pen of three Shearling EWES	10	5	2
SHROPSHIRE.				
18.—	Shearling RAM	10	5	2
19.—	Pair of RAM LAMBS, dropped in 1900	10	5	2
20.—	Pen of three Shearling EWES	10	5	2
OXFORD DOWN.				
21.—	Shearling RAM	10	5	2
22.—	Pair of RAM LAMBS, dropped in 1900	10	5	2
23.—	Pen of three Shearling EWES	10	5	2
SOMERSET AND DORSET HORNED.				
24.—	Shearling RAM	10	5	2
25.—	Pair of RAM LAMBS, dropped after Nov. 1st, 1899	10	5	2
26.—	Pen of three Shearling EWES	10	5	2
CHAMPION PRIZE.				
(Offered by the Somerset County Agricultural Association.)				
Best Ram or Ram Lamb in Class 114 or 115		7		
MOUNTAIN.				
(To be shown in their Wool.)				
27.—	Shearling RAM	10	5	2
28.—	Pair of RAM LAMBS, dropped in 1900	10	5	2
29.—	Pen of three Shearling EWES	10	5	2
CHAMPION PRIZE.				
(Offered by the Somerset County Agricultural Association.)				
Best Exmoor Ram or Ram Lamb in Class 117 or 118		6		

P I G S.		First Prize.	Second Prize.	Third Prize.
CLASS		£	£	£
BERKSHIRE.				
120.—BOAR, farrowed in 1897, 1898, or 1899 . . .		7	3	2
121.—Pair of BOARS, farrowed in 1900 . . .		5	2	1
122.—Breeding Sow, farrowed before 1900 . . .		7	3	2
123.—Pair of Breeding Sows, farrowed in 1900 . . .		5	2	1
SPECIAL PRIZE.				
(Offered by the British Berkshire Society.)				
<i>Best Pig in the Berkshire Classes entered in, or eligible for, the Herd Book</i>				
		5		
LARGE WHITE.				
124.—BOAR, farrowed in 1897, 1898, or 1899 . . .		7	3	2
125.—Pair of BOARS, farrowed in 1900 . . .		5	2	1
126.—Breeding Sow, farrowed before 1900 . . .		7	3	2
127.—Pair of Breeding Sows, farrowed in 1900 . . .		5	2	1
MIDDLE WHITE.				
128.—BOAR, farrowed in 1897, 1898, or 1899 . . .		7	3	2
129.—Pair of BOARS, farrowed in 1900 . . .		5	2	1
130.—Breeding Sow, farrowed before 1900 . . .		7	3	2
131.—Pair of Breeding Sows, farrowed in 1900 . . .		5	2	1
SMALL WHITE or SMALL BLACK.				
132.—BOAR, farrowed in 1897, 1898, or 1899 . . .		7	3	2
133.—Pair of BOARS, farrowed in 1900 . . .		5	2	1
134.—Breeding Sow, farrowed before 1900 . . .		7	3	2
135.—Pair of Breeding Sows, farrowed in 1900 . . .		5	2	1
TAMWORTH.				
136.—BOAR, farrowed in 1897, 1898, or 1899 . . .		7	3	2
137.—Pair of BOARS, farrowed in 1900 . . .		5	2	1
138.—Breeding Sow, farrowed before 1900 . . .		7	3	2
139.—Pair of Breeding Sows, farrowed in 1900 . . .		5	2	1
CHAMPION PRIZES.				
(Offered by the National Pig Breeders' Association.)				
(Under Conditions 70 stated on page cvi.)				
A Gold Medal, value 5 Guineas, for the Best BOAR exhibited in the Large White, Middle White, Small White or Tamworth Classes.				
A Gold Medal, value 5 Guineas, for the Best SOW exhibited in the Large White, Middle White, Small White or Tamworth Classes.				

PRODUCE.	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
	£	£	£	£
CIDER.				
(Open to Growers or Makers.)				
(Classes 140 to 155.)				
or Particulars of Prizes see Entry Forms.)				
CHEESE.				
<i>Classes 157 and 159 the Society's usual Prizes are been increased from £31 to £38 by a grant from the Somerset County Council.</i>				
158				
—Three CHEESES (not less than 56 lbs. each), made in 1899	15	10	5	3
—Three Cheddar CHEESES (not less than 28 lbs. each), made in 1899 by a Student who has received not less than a week's instruction in one of the Society's Cheese Schools	10	6	4	2
—Three CHEESES (not less than 28 lbs. each), made in 1900	8	5	3	2
—Three Cheddar CHEESES (not less than 28 lbs. each), made in 1900 by a Student who has received not less than a week's instruction in one of the Society's Cheese Schools	8	5	2	1
—Eight Loaf or other Truckle CHEESES, made in 1900	5	3	2	1
—Three Caerphilly CHEESES, made in 1900	3	2	1	10s.
—Three Cream or other Soft CHEESES	3	2	1	10s.
(Offered by the Somerset County Council.)				
<i>A Gold Medal for the Best Exhibit in Class 157 or 159 made by a Student who has received not less than a week's instruction in one of the Society's Somerset Cheese Schools.</i>				
BUTTER AND CREAM.				
<i>These Classes are not open to Professional Teachers.)</i>				
—3 lbs. of Fresh (or very slightly salted) BUTTER, made of Cream from Cows other than Channel Island Breeds	4	3	2	1
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BUTTER AND CREAM— <i>continued.</i>				
CLASS	First Prize.	Second Prize.	Third Prize.	Fourth Prize.
164.—3 lbs. of Fresh (or very slightly salted) BUTTER, made of Cream from Cows of Channel Island Breeds only . . .	£ 4	£ 3	£ 2	£ 1
165.—3 lbs. of Fresh (or very slightly salted) BUTTER, made from scalded Cream . . .	4	3	2	1
166.—3 lbs. of BUTTER, to which no salt whatever has been added . . .	4	3	2	1

SPECIAL PRIZES.

Three Prizes of £1 each will be given for BUTTER, which has the best keeping qualities, exhibited in Class 163, 164, 165, or 166. 1 lb. will be taken on the first day of the Show from each Prize lot of Butter in the Classes named, and will be judged on the last day of the Show.

1
1
1

167.—12 lbs. of Salted BUTTER, in a jar or crock, to be delivered to the Secretary four weeks before the Show . . .	4	3	2	1
168.—4 half-pounds of Clotted or Devonshire CREAM	3	2	1	10s.

BUTTER-MAKING.

(For Conditions and Regulations see Entry Form.)

The Prizes in Classes 170, 172, 174, and 176 are offered by the Somerset County Council.

169.—On the 1st day of the Show, open to any Dairymaid (not residing with or employed by her parents) working for wages not exceeding £20 a year . . .	4	3	2	1
170.—On the 1st day of the Show, for Somerset Students only	4	3	1	
171.—On the 2nd day of the Show, open to any man or woman who has never won a First Prize in any open Butter-making competition	4	3	2	1
172.—On the 2nd day of the Show, for Somerset Students, except the winner of the First Prize in Class 170	4	3	1	
173.—On the 3rd day of the Show, open to any woman	4	2	3	1

Prizes for Butter-Making, &c., for 1900.

BUTTER-MAKING— <i>continued.</i>		First Prize.	Second Prize.	Third Prize.	£
CLASS		£ s.	£ s.	£ s.	£
174.—On the 3rd day of the Show, for Somerset Students, except the First Prize winners in Classes 170 and 172 .		4	3	1	
175.—On the 4th day of the Show, open to any man or woman except the winner of the 1st Prize in Class 173 .		4	3	2	
176.—On the 4th day of the Show, for Somerset Students, except the First Prize winners in Classes 170, 172, and 174 .		4	3	1	
CHAMPION PRIZES.					
On the 5th day of the Show the Winners of Prizes in Classes 169 to 176 will compete for the Society's Gold, Silver, and Bronze Medals.					
MILKING.					
177.—For Men 20 years of age and over .	1 10	1 0	0 15	C	
178.—For Women 20 years of age and over .	1 10	1 0	0 15	C	
179.—For Boys and Girls under 20 years of age	1 10	1 0	0 15	C	
SHOEING.					
180.—Best Shoeing of a NAG HORSE by a Smith, 25 years of age and over, on the 3rd day of the Show .	5 0	3 0	2 0	1	
181.—Best Shoeing of a CART HORSE by a Smith on the 4th day of the Show .	5 0	3 0	2 0	1	
182.—Best Shoeing of a NAG HORSE by a Smith, under 25 years of age, on the 5th day of Show .	5 0	3 0	2 0	1	

Conditions and Regulations.

CONDITIONS AND REGULATIONS.

GENERAL.

ENTRIES.

1. The following are the Fees payable for Stock Entries made on or before April 10. After that date and up to April 17, Entries (except in the Harness Classes) will only be received on payment, in each case, of double the Fee named below. *Exhibitors are requested to note that no exception can be made to this.* The Entry-fee is not returnable to an Exhibitor who enters an Animal in a Class for which it is ineligible.

		Members.	Non-Members.
		(see Reg. 5 below)	
Horses other than Harness Horses (see Reg. 2 below), including Horse Box	for each Entry	10s.	.. 20s.
Cattle, Sheep, and Pigs	do.	5s.	.. 15s.

For particulars as to fees in the Cider, Dairy, and Shoeing Classes, see Entry forms.

2. Horses entered in the Harness Classes must be in the Yard by 2 p.m. on the day on which they compete, and, with the consent of the Stewards, may leave the Yard as soon as they have been judged. Entries of Harness Horses, if no Horse Box is required, must reach the Secretary not later than May 8. If a Box is required the Entry must reach the Secretary on or before April 10, or, at double fees, by April 17. The Entry Fees are—

		Members.	Non-Members.
		5s.	.. 10s.
Without Horse Box	for each Entry	10s.	.. 20s.
With Horse Box	do.	10s.	.. 20s.

3. No Exhibitor can make more than three Entries in any one Class of Horses, Cattle, Sheep, or Pigs.

4. No Entry will be received unless the Fee accompanies it, and (if the Exhibitor is a Member of the Society) the subscription for the year, unless previously paid, together with any arrears that may be due.

5. The privilege of entering at Members' Fees is strictly limited to Members of the Society, or of the Somerset County Agricultural Association, elected on or before January 31, 1900, and subscribing not less than 1*l.* annually.

6. Where a Prize is offered for a *pair* or *pen* of Animals, Single Entry-fee only are payable for each *pair* or *pen*, and only one Entry-form must be used.

7. All Entries must be made on the printed forms to be obtained of the Secretary (THOS. F. PLOWMAN, 4, Terrace Walk, Bath), and, in applying for Forms, Exhibitors are requested to state how many Entries they wish to make of either Horses, Cattle, Sheep, Pigs, &c., as each Stock Entry must be made on a separate Form.

8. Every Exhibitor or Competitor is requested to carefully examine the List of Prizes and Conditions, as he will be held responsible for the correctness of his Certificate of Entry. An Exhibitor omitting to give information asked for on the Entry-form, with regard to the age, breeder, name, colour, sire, dam, &c., of an Animal, will be liable to have his Entry disqualified.

9. If an Exhibitor or Competitor fails, when called upon by the Stewards or Council, to prove the correctness of his Certificate of Entry to their satisfaction, the Entry may be disqualified, and any award made to it cancelled.

10. An Exhibitor who has made, in due time, an Entry of Horses, Cattle, Sheep, or Pigs in a particular Class, will be permitted, up to Wednesday, May 2, to withdraw the Entry of such Animal, and to substitute for it the Entry of another Animal in the same Class, on payment of the difference, if any, between the amount of the Entry-fee originally paid for the Animal withdrawn, and the post Entry-fee.

11. An Animal can be entered in as many Classes as it is eligible for on payment of an additional Fee in each Class. No additional Fee is, however, payable in the case of Special Prizes for Exhibits already entered in any particular Class.

12. Every Exhibit must be the *bonâ fide* property of the Exhibitor both at the time of Entry and on the first day of the Exhibition.

SHOWYARD.

13. The Yard will be open for the reception of Horses (see Regulation 2 for Harness Horses), Cattle, Sheep, and Pigs, on Monday and Tuesday, May 28 and 29, from 7 A.M. to 6 P.M. Horses will also be received from 6 to 8 o'clock on the morning of the first day of Show, but all other Stock Entries must be in the Yard the previous day. A Label denoting the number of each Entry will be sent by the Secretary, and must be securely affixed to the head of the Animal, or, in the case of other Exhibits, to the receptacle containing such Exhibits.

14. All Live Stock (see Conditions 2, 38, and 39 for exceptions with regard to Horses) must remain in their places in the Showyard until after six o'clock in the afternoon of the last day of the Show, and shall under no circumstances be taken out of their places in the interval without the special permission of the Stewards.

15. All Exhibits and all persons in charge of the same, will be subject to the Orders, Regulations, and Rules of the Society, and the Stewards shall have the power to remove from the Yard the Stock or property belonging to, and to cancel the admission ticket of, any Exhibitor who shall infringe any of the Regulations or Conditions of the Meeting, or who shall refuse to comply with any instructions given by the Stewards, without any responsibility attaching to the Stewards or the Society in consequence of such removal.

16. The carriage of Exhibits must in all cases be paid by the Exhibitor. No exhibit subject to charges will be received by the Officers of the Society.

17. No Animal shall be decorated with colours other than the Society's Prize Rosettes.

18. No person shall be allowed to fix any placard, or to take down any official placard in the Yard without the written permission of the Stewards.

19. All persons in charge of Exhibits will be subject to the orders of the Stewards, and will be required to parade or exhibit the Animals in their charge at such times as may be directed by the Stewards. Servants must be in attendance each day during the Show at least a quarter of an hour before the time appointed for exhibiting the Animals under their charge in the Show-rings. Owners of Animals exhibited will be held responsible for the behaviour of their Servants, and for the consequences of any misconduct of such Servants.

20. Servants in charge of Stock at night must, if they leave the Yard, return before 10 P.M., or they will not be admitted.

21. Hay, straw, and green food will be supplied by the Society free of expense to Exhibitors at the Forage Stores in the Showyard. Servants must apply at the Forage Stores for their Forage Tickets after they have brought their Animals into the Yard. Corn, meal, and cake can be obtained in the Showyard at fixed prices.

NOTE.—For the convenience of Exhibitors wishing to sell their Animals, a Register will be kept at the Secretary's Office, in which they may enter the prices.

TICKETS.

22. Each Exhibitor of Live Stock will have a Free Ticket of admission to the Showyard sent to him, except in the case of a Member of the Society, who will receive his Member's Ticket in lieu of an Exhibitor's Ticket. Tickets for the use of Servants in charge of Live Stock will also be sent, and the Exhibitor will be held responsible for the proper use of such Tickets. In case of transfer or other improper use of a Ticket, the Exhibitor will be required to pay a fine of 1*l.* for each case. Exhibitors will be held responsible for the attendance at each Parade of as many Servants as Tickets have been issued for.

RESPONSIBILITY.

23. Neither the Society nor any of its Officers or Servants shall be in any way responsible or accountable for anything that may happen (from any cause or circumstance whatever) to Exhibitors or their Servants, or to any Animal or Article exhibited, or property brought into the Showyard, or otherwise for anything else in connection with, or arising out of, or attributable to, the Society's Show, or these or any other Conditions or Regulations prescribed by the Society in relation thereto.

24. Each Exhibitor shall be solely responsible for any consequential or other loss, injury, or damage done to, or occasioned by, or arising from, any Animal or Article exhibited by him, and shall indemnify the Society against all legal or other proceedings in regard thereto.

25. The Society, its Officers, and Servants, will not be liable for any errors or mistakes that may happen in placing or penning the Stock or Articles to be exhibited, but the Servants in charge of the same must see that they are placed or penned according to their Entries.

DISQUALIFICATIONS.

26. No Animal which has been exhibited as Fat Stock at any Show shall be eligible to compete for the Prizes offered in this Prize Sheet.

27. No Animal which has taken a First Prize at any Meeting of this Society can compete again in the corresponding Class.

28. An Animal having any unsoundness likely to be transmitted to its progeny, shall be disqualified thereby from receiving any Prize offered by or through the Society.

29. If it shall be proved to the satisfaction of the Stewards or Council that an Exhibitor or Competitor has knowingly signed an incorrect Certificate, or knowingly given an incorrect Pedigree of any Animal, or has attempted to enter an Animal or other Exhibit, or to obtain a Prize by any other unfair means at this or any other Agricultural Society's Meetings, or is under exclusion from any Breed Society for fraudulent practices, the Council shall have the power to cancel all awards made to such Exhibitor or Competitor and to disqualify him or her from exhibiting or competing at future Meetings of the Society, and to inform other Agricultural Associations of their action in this respect.

PENALTIES.

30. As the non-exhibition of Animals entered for the Show causes unnecessary preparations and expense, and disarranges the Showyard, any person entering Stock, and failing to exhibit the same shall pay a penalty of 10s. for each Entry, unless a Certificate, under the hand of the Exhibitor or his authorised Agent, be lodged with the Secretary of the Society, before the day of Exhibition, certifying that such non-exhibition is caused either by— (1) the death of the animal or animals; or (2) contagious or infectious disease (confirmed by the explanatory Certificate of a Veterinary Surgeon); or (3) by its becoming ineligible for the Class in which it has been entered.

31. Every Exhibitor will be required to undertake to forfeit and pay to the Society the sum of 20*l.*, as and for liquidated damages, if any Animal which he exhibits be, to his knowledge, suffering from any contagious or infectious disease, and the Stewards are empowered to prevent the entry of any diseased Animal into the Yard, or to have it removed therefrom.

32. Any infringement of any of these or any other prescribed Regulations or Conditions will subject the Exhibitor to a fine of 1*l.* by the Stewards, and to the forfeiture, by order of the Council, of any Prize to which he may be entitled (in addition to all other consequences attaching to such infringement). The Council reserves to itself the right to inform other Agricultural Associations of any decision it may come to with respect to an Exhibitor.

AWARDS.

33. The Society reserves to itself the right to withhold any Prize, if, in the opinion of the Stewards, the conditions and regulations have not been properly complied with.

34. No Second Prize will be given in any Class of Stock unless there are three Entries exhibited, no Third Prize unless there are six Entries exhibited, and no Fourth Prize unless there are nine Entries exhibited, except in the case of sufficient merit and on the special recommendation of the Judges, with the approval of the Steward of the Department, at the time of Judging the Class.

35. Only the signed Awards of the Judges are accepted by the Society as evidence that a Prize has been awarded, and the production of the Prize-card or the rosette by an Exhibitor will not entitle him to the Prize.

36. The Certificate of the Veterinary Inspector, whether as to age or soundness, shall be required only in cases where the Judges are in doubt, or where the Stewards may consider it necessary. The decision of the Inspector in such cases shall be final and conclusive; and in case it shall be against the Animal to which a Prize has been awarded, such Animal shall be disqualified from receiving such Prize.

PROTESTS.

37. Any Exhibitor wishing to lodge a protest having reference to Live Stock exhibited at this Meeting must make the same in writing on a form to be obtained from the Secretary and deposit with him the sum of 3*l.* If on investigation the protest is not sustained to the satisfaction of the Stewards, the sum thus deposited shall, at the discretion of the Council, be forfeited to the funds of the Society. All protests must be delivered at the Secretary's Office in the Showyard, on the day on which the award is made, and no protest will be **SUBSEQUENTLY** received, unless a satisfactory reason be assigned for the delay. The Stewards will consider such protests at Eleven o'clock on the following day at the Secretary's Office, at which time and place any person making a protest must attend or be represented by his authorised agent. The decision of the Stewards shall be final.

APPLYING TO CERTAIN CLASSES ONLY.**HORSES.**

38. Horses can be removed from the Yard at night on deposit by the Exhibitor of 3*l.* at the Finance Office, which sum will be forfeited if the Horse does not return at 8 A.M. each day during the Exhibition. This regulation does not apply to Harness Horses.

39. The Stallions in Classes 1 and 2 can be taken out of the Yard after the parade of Horses on the third day of the Show.

40. Exhibitors must provide saddles for Horses in Classes 12, 13, 14, 15, 20, 21, 24, 25, and 26, as they are to be ridden; and vehicles and harness for those in Classes 27 to 40, which are to be driven.

41. No Horse, unless a Foal, will be admitted into the ring without a proper bit.

42. The Prizes for Stallions in Class 1 will be withheld until a Certificate from the owner is delivered to the Secretary that the Horse has served at least 20 Mares during the current season.

43. All Foals must be the offspring of the Mares with which they are exhibited, and the name of the Sire of the Foal must be stated on the Certificate of Entry.

44. Mares entered as in-Foal shall hereafter be certified to have produced a living Foal before the 1st August of the year of the Show. If the required Certificate, which must be on a form obtainable from the Secretary, is not received by September 30, 1900, the Prize awarded will be forfeited.

45. Horses may, at the discretion of the Stewards, be measured, and the measurement shall be taken in the shoes worn by the Entry at the time of judging.

46. The following special conditions apply only to the Prize offered by the Shire Horse Society, viz.: the owner of the Animal entered to have been a Member of the Bath and West and Southern Counties Society for not less than six months previous to April 17, 1900; a Mare six years old, or upwards, to have had a living Foal; no Animal to compete which has won the Shire Horse Society's Gold Medal during the current year, the Royal and London Shows being excepted; the winning Animal to be entered, or eligible for entry, in the Shire Horse Society's Stud Book; and a Certificate that she is free from hereditary disease to be lodged with the Secretary of the Shire Horse Society, the Veterinary examination to be made on the ground by the Veterinary Inspector appointed for the Show.

47. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Brood Mares, viz.:—The Mare awarded the Medal must, if not already entered, be registered within a month of the award, in the Society's Record of Hunter Mares and Sires, possessing a Certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a Member of the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground. In the case of Mares entered as "in-foal," a further Certificate of foaling must also be lodged with the Secretary of the Hunters' Improvement Society before the award will be confirmed.

NOTE.—If the Judges select a Brood Mare whose Entry for the Record was lodged before the date of the Bath and West Society's Show, the Prize will be increased to a Gold Medal and 1*l.*, or 5*l.* and a Silver Medal.

48. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for Hunter Filly. The Filly awarded the Medal must, if not already entered, be registered, within a month of the award, in the Society's Record of Hunter Mares and Sires, and not having previously won the Hunters Improvement Society's Silver Medal in 1900,

Conditions and Regulations.

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possessing a Certificate of soundness from hereditary disease, signed by the Bath and West Society's appointed Veterinary Inspector, who must be a Member to the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground.

NOTE.—If the Judges select a Filly whose Entry for the Record was lodged before the date of the Bath and West Society's Show, the Prize will be increased to a Silver Medal and 1*l*.

49. The following Special Conditions apply only to the Prize offered by the Hunters' Improvement Society for best Hunter of either sex. The Hunter awarded the medal must possess a Certificate of soundness from hereditary disease signed by the Bath and West Society's Veterinary Inspector, who must be a member of the Royal College of Veterinary Surgeons, after his examination of the Animal on the Show Ground; if a Mare is selected, both she and her Dam, if not already entered, must be registered within a month of the award in the Record of Hunter Mares and Sires in Volume VIII.; if a Colt or Gelding is selected, the Dam must comply with such conditions before the award will be confirmed. No Animal may take more than one of these Medals in 1900.

50. The following Special Conditions apply only to the Gold Medal offered by the Hackney Horse Society for Hackney Mare or Filly:—A Mare, six years old or upwards, to have had a living Foal. An Animal, having been awarded one of the Hackney Society's Gold Medals, to be ineligible to take a second Medal during the current year, the Royal and London Shows being excepted. Any Animal awarded a Medal must be entered or accepted for registry in the Hackney Horse Society's Stud Book, and a Certificate that it is free from hereditary disease must be lodged with the Secretary of the Hackney Horse Society before the Medal will be despatched.

51. The following Special Conditions apply only to the Gold Medal offered by the Hackney Horse Society in the Harness Classes:—All Horses competing for the Medal must be by a registered Hackney Sire, and a Certificate signed by the breeder of the Animal must be forwarded to the Secretary of the Hackney Horse Society before the Medal will be despatched. Each Animal must be measured by a qualified Veterinary Surgeon on the Show Ground and a Certificate of soundness, stating exact height, must be supplied. The name and number of the Sire and the name and address of the breeder of each Animal must be given on the Entry-form so that it can appear in the Catalogue. No Animal can take more than one of the Harness Medals in any one year. (The Medal is of the actual value of 5*l*., and that amount will be paid by the Hackney Horse Society at any time if the Medal is returned in good condition.)

CATTLE.

52. All Cattle must be properly secured to the satisfaction of the Officers of the Society, on being brought to the gate of the Yard, or they will not be admitted.

53. All Bulls must have a ring or clamp attached to the nose, and in the mixed Classes must be provided with a strong chain, and be led with a proper stick.

54. All Cattle will be required to be paraded in the ring at least once a day at the discretion of the Stewards.

55. No Bull calved before January 1, 1898, will be eligible to receive a Prize until certified to have served not less than six different Cows (or Heifers), previous to June 1st, 1900, and to be the sire of live Calves dropped in the year 1900.

56. No Cow or Heifer, entered as in-milk, will be eligible to receive a Prize until certified to have had a living Calf within the fifteen months preceding the date of Show, or that the Calf, if dead, was born at the proper time.

57. Every Cow or Heifer in-milk shall be milked dry in the Showyard at 6 P.M. on the evening preceding the day of judging, or, in the Milk and Butter Test Classes, at such hours as the Stewards may appoint, in the presence of an Officer of the Society appointed for the purpose.

58. Any Animal in the Cattle Classes found to be artificially coloured will be disqualified.

59. Any person selling Milk in the Yard, except in the place appointed by the Stewards, will be fined 5s. for each infringement of this Regulation.

60. The Blythwood Challenge Bowl when won two years in succession or three years at intervals, by different animals belonging to the same Exhibitor, will become absolutely his property. Any Animal having been awarded one of the "Blythwood Bowls" in 1900 will not be eligible to compete for a second in the current year. The possessor of the Bowl must give security to the Society that it shall be delivered up to the Secretary 14 days before the commencement of the Society's Show the following year; and in the event of the same Exhibitor not being the winner of the Bowl the second year, a Silver Medal will be given him by Sir James Blyth, as a memento of his success in the previous year.

61. The Challenge Cup offered by the Duke of Marlborough must be won twice by the same Exhibitor before becoming his absolute property. The possessor of the Cup must give security to the Society that it shall be delivered up to the Secretary 14 days before the commencement of the Society's Show the following year.

62. Except in the Local and Dairy Classes, every Animal entered for Competition must be entered, or certified as eligible to be entered, in the Herd Book of its Breed, where such Herd Book exists, and has been in existence for not less than seven years. Where an Animal is entered by the Exhibitor as eligible for Entry in the Herd Book of its Breed, proof of such eligibility must be furnished to the Secretary at the time of making the Entry.

SHEEP.

63. All Sheep (except those in the Mountain Classes, which must be shown in their wool) over one year old must have been really and fairly shorn bare on or after the 1st of March, 1900. If the Judges consider that a Sheep has not been shorn bare they will report this to the Stewards, with a view to its disqualification.

64. Each pen of Ewes must be of the same Flock.

Pigs.

65. The Pair of Pigs in each pen must be of the same litter.

66. All Sows farrowed before 1900 shall be certified to have had a litter of live Pigs within six months preceding the first day of exhibition, or to be in-Pig at the time of entering, so as to produce a litter of Pigs, farrowed at their proper time, before the 1st of September following. In the case of in-Pig Sows the Prize will be withheld until the Exhibitor shall have furnished the Secretary with a Certificate of farrowing as above. If the required Certificate, which must be on a form obtainable from the Secretary, is not received on or before the 15th September following, the Prize awarded will be forfeited.

67. All Pigs exhibited with a Sow shall be her own produce, of the same litter, and not exceeding two months old at the time of the Show.

68. No Sow above 18 months old that has not produced a litter of live Pigs shall be eligible to compete in any of the Classes.

69. Any Animal in the Pig Classes found to be artificially coloured will be disqualified.

70. The following Special Conditions apply only to the Champion Prizes

offered by the National Pig Breeders' Association:—The winner of a Medal must be entered or eligible for entry in the Herd Book of its Breed, and no Animal can take more than one of these Gold Medals in the same year.

CIDER, DAIRY PRODUCE, MILKING, AND SHOEING.

For Conditions and Regulations see Entry-Forms.

ADJUDICATION OF PRIZES.

71. The Judges are instructed as follows, and Entries are received subject to this:—

a. Not to award any Prize or Commendation unless the Entry possesses sufficient merit.

b. Not to award a Prize to any Horse or Mare unless it is free from unsoundness likely to be transmitted to its progeny; or if a Gelding, unless free from unsoundness; in either case, an accident having temporary consequences only excepted.

c. In awarding Prizes to Cattle, Sheep, and Pigs, to decide according to the relative merits of the Animals for Breeding purposes, and not to take into consideration their present value to the butcher.

d. To make the milking capacity and form of udder one of the chief points in awarding prizes to pure bred Short-Horn Cows and Heifers.

e. To draw the attention of the Stewards to any Exhibit that has been improperly prepared for exhibition or is wrongly entered.

f. To report to the Stewards for disqualification any Sheep which in their opinion has not been shorn bare.

g. To give in a "RESERVED NUMBER" in each Class, indicating the Animal or Exhibit which in their opinion possesses sufficient merit for the Prize, if the Animal or Exhibit to which the Prize is awarded should become disqualified. Should the "Reserve Number" succeed to a Prize, and be itself disqualified, the Prize will be forfeited.

h. Immediately after the Judging to deliver to the Stewards on the special sheets, to be obtained at the Secretary's Office, their awards, signed, stating the numbers to which the Prizes are adjudged, and noting all disqualifications.

72. Should any question arise upon which the Judges may desire a further opinion, the Stewards shall provide them with a Referee.

PAYMENT OF PRIZES.

73. Cheques for the Prizes awarded (except where further qualification of an Animal is required) will be drawn at the meeting of the Finance Committee held in July, 1900, and will then be forwarded by post to the Exhibitors to whom they have been awarded.

INTERPRETATION OF CONDITIONS.

74. The Society reserves to itself by its Council the sole and absolute right to interpret these or any other prescribed Conditions and Regulations, or Prize Sheets, and to arbitrarily settle and determine all matters, questions, or differences in regard thereto, or otherwise arising out of or connected with or incident to the Show. Also to refuse and to cancel any Entries, disqualify Exhibitors, prohibit exhibition of Entries, vary or cancel awards of Prizes or Reserved Numbers, and relax Conditions, as the Society may deem expedient.

BATH MEETING,

MAY 30, 31, JUNE 1, 2, AND 4, 1900.

PRIZES FOR POULTRY.

CLASS	First Prize.	Second Prize.	Third Prize.
	£ s.	s. d.	s. d.
1.—COCHIN—Cock	1 10	15 0	10 0
2.—Ditto—Hen	1 10	15 0	10 0
3.—BRAHMA—Cock	1 10	15 0	10 0
4.—Ditto—Hen	1 10	15 0	10 0
5.—LANGSHAN—Cock	1 10	15 0	10 0
6.—Ditto—Hen	1 10	15 0	10 0
7.—PLYMOUTH ROCK—Cock	1 10	15 0	10 0
8.—Ditto—Hen	1 10	15 0	10 0
9.—WYANDOTTE—Cock	1 10	15 0	10 0
10.—Ditto—Hen	1 10	15 0	10 0
1.—ORPINGTON—Cock	1 10	15 0	10 0
12.—Ditto—Hen	1 10	15 0	10 0
13.—MINORCA—Cock	1 10	15 0	10 0
14.—Ditto—Hen	1 10	15 0	10 0
15.—LEGHORN—Cock	1 10	15 0	10 0
16.—Ditto—Hen	1 10	15 0	10 0
17.—HAMBURG—Cock	1 10	15 0	10 0
18.—Ditto—Hen	1 10	15 0	10 0
19.—DORKING (Coloured)—Cock	1 10	15 0	10 0
20.—Ditto—Hen	1 10	15 0	10 0
21.—DORKING (Silver Grey)—Cock	1 10	15 0	10 0
22.—Ditto—Hen	1 10	15 0	10 0
23.—DORKING (White or Cuckoo)—Cock	1 10	15 0	10 0
24.—Ditto—Hen	1 10	15 0	10 0
25.—OLD ENGLISH GAME—Cock	1 10	15 0	10 0
26.—Ditto—Hen	1 10	15 0	10 0
27.—INDIAN GAME—Cock	1 10	15 0	10 0
28.—Ditto—Hen	1 10	15 0	10 0
29.—MALAY—Cock	1 10	15 0	10 0
30.—Ditto—Hen	1 10	15 0	10 0
3.—FRENCH—Cock	1 10	15 0	10 0
32.—Ditto—Hen	1 10	15 0	10 0
33.—ANY OTHER DISTINCT BREED (not previously mentioned)—Cock	1 10	15 0	10 0
34.—Ditto—Hen	1 10	15 0	10 0

SPECIAL PRIZES.

(Offered by Captain J. C. Best.)

35.—ANY DISTINCT BREED—Cock and four Hens, bred in 1899 or 1900, the property of one Exhibitor	25	25	25
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CHICKENS OF 1900.	First Prize.	Second Prize.	Third Prize.
	£ s.	s. d.	s. d.
chin, Brahma, Langshan, Plymouth Rock, Wyandotte, or Orpington—Cockerel	1 10	15 0	10 0
itto—Pullet	1 10	15 0	10 0
inorca, Leghorn, Hamburg, or French—Cockerel	1 10	15 0	10 0
itto—Pullet	1 10	15 0	10 0
orking, Game, Malay, or any other Distinct Breed (not previously mentioned)—Cockerel	1 10	15 0	10 0
itto—Pullet	1 10	15 0	10 0
LIVE TABLE POULTRY.			
air of Cockerels of 1900, of any Pure Breed	1 10	15 0	10 0
itto—Pullets	1 10	15 0	10 0
air of Cockerels of 1900, of a first cross from any Pure Breeds	1 10	15 0	10 0
itto—Pullets	1 10	15 0	10 0
SELLING CLASSES.			
NY DISTINCT BREED—Cock (<i>price not to exceed 12. 1s.</i>)	1 10	15 0	10 0
NY DISTINCT BREED—Hen (<i>price not to exceed 12. 1s.</i>)	1 10	15 0	10 0
Ducks, Geese, and Turkeys.			
RAKE OF DUCK (Aylesbury)	1 10	15 0	10 0
itto (Rouen)	1 10	15 0	10 0
itto (Pekin)	1 10	15 0	10 0
ANDER	1 10	15 0	10 0
DOSE	1 10	15 0	10 0
URKEY—Cock	1 10	15 0	10 0
itto—Hen	1 10	15 0	10 0
DEAD TABLE POULTRY.			
<i>forwarded alive, and to be killed and plucked by a dealer acting for the Society. See Regulation 12.)</i>			
air of Cockerels of 1900, of any Pure Breed	1 10	15 0	10 0
itto—Pullets	1 10	15 0	10 0
air of Cockerels of 1900, of a first cross from any Pure Breeds	1 10	15 0	10 0
itto—Pullets	1 10	15 0	10 0
air of Ducklings of 1900	1 10	15 0	10 0

POULTRY.

CONDITIONS AND REGULATIONS.

CHARGES, &c.

1. Exhibitors may make an unlimited number of Entries in each Class on payment of Fees as follows:—

	Members.	Non-Members.
	s. d.	s. d.
Classes 1 to 54	2 6	5 0
Dead Poultry Classes, 55 to 59	1 0	2 6

The above Fees include coops, food, and attendance.

N.B.—The above Fees *must* be sent with the Entries, or no notice will be taken of the latter.

2. The privilege of entering at Member's Fees is strictly limited to Members of the Society, or of the Somerset County Agricultural Association, elected on or before January 31, 1900, and subscribing not less than 1*l.* annually.

3. All Entries must be made on the printed forms, to be obtained of the Secretary (THOS. F. PLOWMAN, 4, Terrace Walk, Bath), and such forms must be correctly filled up and returned to the Secretary, together with all Fees due, on or before May 4. Exhibitors are requested to carefully examine the List of Prizes and Conditions, as the Society cannot be responsible for any errors made by Exhibitors in the Entry-forms, and birds entered in a wrong Class will be necessarily excluded from competition. No alterations can be made in Entry-forms after they have been received by the Secretary.

4. The Council reserve the right to refuse the Entries of any person.

5. Exhibitors must state the price and breed of their birds on their Entry-forms.

SHOWYARD.

6. All birds must be in the Showyard by 6 P.M. on *Tuesday, May 29*, and no bird can be removed before Monday, June 4, at 7 P.M. Any Exhibitors who send for their birds must do so between 7 and 8 P.M. on that day.

7. All carriage must be prepaid to Bath Railway Station, otherwise the birds will not be received at the Exhibition; but they will be conveyed free of expense from the Station to the Showyard and back.

8. No Exhibitor or Servant will be allowed into the tent until the birds have been judged.

9. The Poultry Tent will not be open to the public until 2 o'clock on the first day of the Exhibition.

10. A Non-Transferable Admission Ticket for the Exhibition will be sent to each Exhibitor whose Entry-fees amount to 1*l.* and upwards.

TABLE POULTRY.

11. In these Classes (42 to 45 and 55 to 59) quality for the table will be considered before mere weight. The date of hatching must be given, and, in the case of cross-bred birds, the breeds of the parents.

12. In Classes 55 to 59 the whole of the birds will be first exhibited alive. They will all be killed on the evening of Wednesday, May 30, and trussed by a qualified fowler, the Prizes being finally awarded to the dead birds. These will then all be exhibited, but will be withdrawn from exhibition when considered necessary, and, if unsold, will be returned to Exhibitors after 6 P.M. on Friday, June 1.

Poultry Conditions and Regulations.

cxix

Persons are recommended to put a reasonable price upon their Exhibits in these pens so as to promote the sale of them.

SALES.

All birds may be claimed, at the price put upon them, any time after 4 o'clock on Wednesday, May 30, and a sale *must take place* if the price stated be paid to the Poultry Office at the time of claiming. *No alteration can be made in prices stated on the Entry-forms and in the Catalogue until after Friday,* when the price may be reduced on payment to the Stewards of 1s. per pen in alteration. Birds must be sold in pens, and the price stated must include the keeper. A charge of 10 per cent. will be made for all birds sold. The persons who have the management of the sales cannot take charge of birds which are sold privately.

AWARDS.

Except under a special recommendation from the Judges, no Second Prize will be given in any of the Classes unless there are three Entries, and no Third Prize where there are six Entries.

DISQUALIFICATIONS.

The Judges are empowered to withhold a prize or prizes where birds are not found of sufficient merit, and are instructed to disqualify any that have been castrated, dubbed, drawn, trimmed, marked, or dyed.

An Exhibitor detected in a false statement as to the age, &c., of any bird, or in any other practice calculated to deceive or mislead the Judges or Stewards, forfeits all or any Prizes awarded to him or her at the Show, and will be prohibited from competing at any future Show of the Society, and the Council shall have power to inform other Societies of their action in this respect.

No person who shall have been shown to the satisfaction of the Council to have been excluded from exhibiting for Prizes at the Exhibition of any other Society on account of having attempted to obtain a Prize by giving a false Certificate, or by unfair means, and no person who is under exclusion from any Breed Society on account of adulterous practices, shall be allowed to exhibit at this or any other Meeting of the Society.

Unhealthy birds will not be exhibited, but will be immediately returned to their owners, and the Fees will be forfeited.

PROTESTS.

In order to check frivolous and vexatious protests, no protest will be entertained unless accompanied by a deposit of 1*l*. in each case; and in case the protest is not sustained, the deposit may be forfeited to the funds of the Society. All protests must be made before 12 o'clock (noon) on Thursday, May 31.

FORFEITS.

Persons entering birds, and failing to send the same to the Exhibition, will forfeit the entrance Fee for each pen so left vacant.

GENERAL.

All birds shown must be *bonâ fide* the property of the Exhibitor.

For each pen entered, the Exhibitor will receive a Label, on the reverse side of which he must legibly write his name and address for the return journey.

All Eggs laid at the Exhibition will be destroyed.

The Stewards pledge themselves to take every care of the birds exhibited, but they nor the Society will, in any case, be responsible for any accident, loss, or

damage, from whatever cause arising, the Exhibits being entered at the sole risk of the Exhibitors, and Exhibitors will be required to hold the Society harmless in the event of loss.

25. In case of death of any bird during the Exhibition, it will be sent back for the inspection of the Exhibitor.

26. The Poultry Department is subject to the Rules and Regulations of the Society and its Officers.

. *The use of properly-constructed Poultry Baskets will facilitate the safe and speedy conveyance of the birds to and from the Exhibition.*

The Society cannot, under any circumstances, undertake to send telegrams to Exhibitors as to Judges' Awards.

Applications for Catalogues (price 1s. each) and printed lists of Awards should be made only to the Publishers, Messrs. W. LEWIS AND SONS, Herald Office, Bath.

By Order of the Council,

THOMAS F. FLOWMAN, Secretary.

4, Terrace Walk, Bath.

Telegraphic Address—"FLOWMAN, BATH."

FI

FINANCIAL STATEMENTS

FOR

1899

WITH ITEMS OF 1898 FOR COMPARISON.

	PAGES
Summary of the Cash Account	cxiv., cxv.
Detailed Cash Account	cxvi.—cxvii.
Assets and Liabilities	cxviii.

The Bath and West a

SUMMARY OF THE CASH ACCOUNT

WITH COMPARATIVE STATEMENT

Dr.

Page of accompanying Cash Account.	RECEIPTS.				1899. EXETER.			1898 CARD
					£	s.	d.	£
	General Receipts:—							
cxvi	Dividends and Interest				549	5	3	552
cxvi	Subscriptions from Members				1,111	9	6	1,133
cxvi	Life Compositions				20	0	0	30
cxvi	Journal				37	0	9	39
							1,717 15 6	1,755
	Show Receipts:—							
cxvi	Implements				1,689	10	3	1,691
				£ s. d.				
cxviii	Horses			394	0	9		334
cxviii	Cattle, Sheep, and Pigs			541	6	0		430
cxviii	Catalogues, &c.			83	9	7		83
					1,018	16	4	848
cxviii	Poultry				133	7	1	106
cxviii	Shoeing				20	5	0	21
cxix	Arts			9	15	0		10
cxix	Art Union			139	0	0		89
cxix	Art-Manufactures			114	6	0		112
					263	1	0	212
cxixii	Cheese and Butter				82	15	2	107
cxixii	Dairy				100	2	6	128
cxixii	Cider				13	17	6	9
cxixii	Admissions				3,868	7	0	3,891
cxixiv	Unapportionable:—							
cxixiv	Contract Premiums, &c.			315	2	6		333
	Stand Fittings			446	5	1		341
					761	7	7	675
cxixiv	Bath for 1900 Show				800	0	0	800
							8,751 9 5	8,292
cxixiv	Schools						1,315 18 10	1,358
cxixvi	Experiments						350 0 0	300
cxixvi	Balance in Bank, Jan. 1						12,135 3 9	11,706
							373 16 3	120
							£ 12,509 0 0	11,826

Southern Counties Society.

FOR THE YEAR ENDING DEC. 31st, 1899.

STATEMENT FOR 1898.

CR.

PAYMENTS.		1899. EXETER.		1898. CARDIFF.	
		£	s. d.	£	s. d.
General Expenses :—					
Salaries		775	0 0	775	0 0
Rent, Postage, Stationery, &c.		233	16 6	216	16 5
Journal		448	12 5	413	18 4
			1,457 8 11		1,405 14 9
Show Expenses :—					
Implements		572	12 5	602	11 3
	£ s. d.				
Horses	1,104 7 3			1,011	7 2
Cattle, Sheep, and Pigs	2,352 16 6			2,198	7 10
Fodder, &c.	436 4 5			428	11 10
		3,893	8 2	3,838	6 10
Poultry		285	6 10	251	11 6
Shoeing		112	1 11	97	2 8
Arts	249 8 6			218	9 10
Art Union	234 5 9			174	1 4
Art-Manufactures	66 11 6			66	16 0
		550	5 9	459	7 2
Music		269	3 6	285	3 2
Horticulture		168	0 1	169	7 2
Cheese and Butter		251	11 7	274	2 1
Dairy		386	14 5	409	3 9
Cider		89	5 1	63	8 11
Bees		10	0 0	..	
Public Announcements		402	13 10	402	11 10
Unapportionable :—					
Stand Fittings	300 2 6			272	10 11
Erection of Offices, &c.	807 17 1			757	17 10
Carriage of Plant	124 16 2			127	5 2
Police	95 18 0			96	7 6
Miscellaneous	330 2 9			248	10 3
		1,858	16 6	1,502	11 8
			8,650 0 1		8,155 8 0
Schools		..	1,261 9 9	1,290	18 11
Experiments		..	365 15 0	601	0 5
			11,754 13 9	11,453	2 1
Balance in Bank, Dec. 31		..	754 6 3	373	16 3
			£ 12,509 0 0		11,826 18 4

audited and found correct,
ALBERT GOODMAN, F.C.A..

Passed by Council,
January 30th, 1900.
THOS E BLOOMAN

The Bath and West at

Dr. CASH ACCOUNT FOR THE YEAR ENDING DEC. 31

RECEIPTS.		1899. EXETER.		1898 CARDIFF
		£ s. d.	£ s. d.	£ s.
DIVIDENDS AND INTEREST:—				
Consols		96 0 0		96
New Zealand Stock		53 1 0		53
India Stock		156 16 8		160
Canada Stock		69 4 9		69
Queensland Stock		106 7 8		106
New South Wales Stock		67 15 2		67 1
			549 5 3	552 1
SUBSCRIPTIONS FROM MEMBERS:—				
Arrears		30 12 0		55 11
Governors		225 15 0		222 1
Subscribers of £1 and upwards		834 11 0		832 11
Ditto of 10s.		20 11 6		21 1
			1,111 9 6	1,133
LIFE COMPOSITIONS				
			20 0 0	30
JOURNAL:—				
Sales		12 3 6		12 1
Advertisements		24 17 3		27
			37 0 9	39 1
IMPLEMENTS:—				
Entry Fees		66 0 0		62 1
Fees for Space:—				
Machinery-In-Motion Shedding		307 0 0		334
Ordinary		361 12 0		360
Miscellaneous		362 12 6		362
Boarded		285 18 6		284
Seed		29 0 0		49
Uncovered Ground		167 19 3		122 1
Catalogue Fees		109 8 0		117
			1,639 10 3	1,601 1
Carried forward			£ 2,407 5 9	

Southern Counties Society.**899, WITH COMPARATIVE STATEMENT FOR 189****PAYMENTS.****1899.****EXETER.**

£ s. d. | £ s.

GENERAL:—**Salaries:—**

Secretary (Including Clerks, Gas, Coal, Lodgings at Show, &c.)	700 0 0
Auditor	20 0 0
Consulting Chemist	30 0 0
Consulting Botanist	25 0 0

775

Printing	31 17 6
Stationery and Finance Books	36 2 1
Postage, Telegrams, Cheque and Receipt Stamps	65 8 9
Rent of Offices	26 0 0
Travelling Expenses	37 12 9
Carriage of Goods	11 2 7
Directories and Reference Books	4 13 1
Finance Committee's Expenses	6 8 0
Subscriptions	4 4 0
Repairs, &c.	3 6 3
Hire of London Rooms for Meetings	7 1 6

233

JOURNAL:—

Editor	100 0 0
Associate Editor	100 0 0
Printing and Binding	170 7 11
Plans	3 0 0
Journal Distribution	28 10 5
Postage, Stationery, Reference Books, &c.	6 16 1
Payments to Authors	39 18 0

448 1

IMPLEMENTS:—

Shedding	467 5 5
Stewards and Assistants	67 16 6
Printing, Stationery, &c.	37 10 6

572 1

Carried forward £ 2,630

EXETER MEETING, 1899. (cxviii)

Dr. CASH ACCOUNT—*continued.*

RECEIPTS.	1899. EXETER.			1898. CARDIFF.		
	£	s.	d.	£	s.	d.
Brought forward . . . . .	..			3,407	5	9
HORSES, CATTLE, SHEEP, AND PIGS:—						
Horses:—Entry Fees	162	15	6			138 5 0
Fines and Forfeits	7	0	0			3 0 0
Grand Stand Admissions	149	5	3			86 1 9
Special Prizes	75	0	0			107 0 0
	394	0	9			334 6 9
Cattle, Sheep and Pigs:—						
Entry Fees	300	11	0			233 0 0
Fines	17	0	0			15 11 0
Special Prizes	223	15	0			131 10 0
	541	6	0			430 1 0
Catalogues	80	9	7			80 0 0
Manure, &c.	3	0	0			3 16 6
	83	9	7			83 16 6
				1,018	16	4
						848 4 3
POULTRY:—						
Entry Fees	122	5	6			163 13 6
Special Prize	10	0	0			1 1 0
Commission on Sales	1	1	7			1 13 6
				133	7	1
						166 6 0
SHOEING:—						
Entry Fees	20	0	0			21 0 0
Miscellaneous	0	5	0			..
				20	5	0
Carried forward . . . . .	..			£ 4,579	14	2

CASH ACCOUNT—continued.

PAYMENTS.		1899.		18
		EXETER.		CAR
		£ s. d.	£ s. d.	£
Brought forward . . . .		..	2,030 1 4	
HORSES, CATTLE, SHEEP, AND PIGS:—				
Horses—Prizes	£ s. d. 678 10 0			631
Shedding and Grand Stand	344 16 11			272
Stewards and Assistants	40 18 0			52
Judges	37 9 10			56
Horse Standard	2 12 6			
		1,104 7 3		1,011
Cattle—Prizes	£ s. d. 1,145 10 0			1,108
Less deferred	22 0 0			10
	1,123 10 0			1,098
Sheep—Prizes	455 5 0			375
Pigs—Prizes	191 0 0			172
Less deferred	3 0 0			3
	188 0 0			169
Shedding and Canvas	405 1 3			352
Stewards and Assistants	34 15 0			39
Judges	146 5 3			164
		2,352 16 6		2,198
Canvas, &c.	116 10 0			112
Fodder and Insurance	169 5 4			12
Steward of Fodder and Assistants	19 16 6			28
and Horse hire	29 1 6			10
Veterinary Inspector	9 4 0			66
Rosettes	73 8 0			9
Printing and Stationery	10 19 1			15
Refreshments to Judges	8 0 0			0
Deferred Prizes of 1898 . . . . .	..		
Fee returned		436 4 5		428
			3,893 8 2	3,638
POULTRY:—				
Marquee, Staging and Sheds	59 5 0			65
Stewards and Assistants	28 15 4			17
Judges	13 5 0			13
Prizes	162 0 0			142
Printing, Stationery, Carriage, &c.	18 11 0			12
Reading College Conference	3 10 6			
			255 6 10	251
SHOEING:—				
Prizes	22 0 0			22
Judges	20 17 2			20
Anvils, Forges, Coals, Horses, and Printing	16 11 2			8
Shedding	48 0 0			39
Steward and Assistants	4 13 7			6
			112 1 11	97
Carried forward . . . . .		..	£ 6,320 18 3	

EXETER MEETING, 1899.

(CXX)

Dr.

CASH ACCOUNT—continued.

RECEIPTS.		1899. EXETER.		18 (CAR)
Brought forward		£ s. d.	£ s. d.	£
ARTS:—			4,579 14 2	
Catalogues		5 0 0		5
Commission on Sales		4 15 0		5
			9 15 0	10
ART UNION:—				
Sale of Tickets		130 3 0		84
Excess paid on Prizes.		8 17 0		5
			139 0 0	89
ART-MANUFACTURES:—				
Fees for Space		..	114 6 0	112
Carried forward		..	4,842 15 2	

CASH ACCOUNT—*continued.*

CR.

P A Y M E N T S.	1899. EXETER.			1898. CARDIFF.		
	£	s.	d.	£	s.	d.
Brought forward . . . .	..			6,320	18	3
ARTS:—						
Labour and Fittings	57	5	6		54	4 0
Steward and Assistants	53	8	7		47	12 10
Hanging and re-packing Pictures	48	15	4		43	14 6
Local Agents and Carriage	69	4	4		61	6 3
Ditto Ditto (1898)	13	3	9		..	
Printing and Stationery, Insurance, &c.	7	11	0		11	12 3
				249	8	6
				218	9	10
ART UNION:—						
Pictures Purchased	216	6	0		160	12 10
Printing and Stationery	8	6	6		6	3 9
Advertising	2	2	0		2	2 0
Commission on Sale of Tickets	7	11	3		5	2 9
				234	5	9
				174	1	4
ART-MANUFACTURES:—						
Labour and Fittings	59	15	6		56	17 0
Steward and Assistants	5	10	0		5	3 0
Printing	1	6	0		4	16 0
				66	11	6
				66	16	0
MUSIC:—						
Bands and their Fares	242	0	0		254	11 8
Erecting Band Stands and Seats and Printing	23	15	0		22	1 6
Steward	3	8	6		8	10 0
				269	3	6
				285	3	2
HORTICULTURE:—						
Gratuities to Gardeners	95	0	0		100	0 0
Erecting and Repairing Tent and Staging	57	10	0		54	17 0
Steward and Assistants	15	10	1		14	10 2
				168	0	1
				169	7	2
Carried forward . . . .	..			£ 7,308	7	7

Dr.

CASH ACCOUNT—continued.

RECEIPTS.		1899. EXETER.		1899 CARD
		£	s. d.	£ s. d.
Brought forward		..		4,842 15 2
CHEESE AND BUTTER:—				
Entry Fees		60	17 6	75 1
Cheese and Butter Sales		21	17 8	20 1
Special Prizes and Fines		..		11 1
				82 15 2
				107 1
DAIRY:—				
Admissions		11	13 6	28 1
Entry Fees, Competitions		24	4 0	25 1
Ditto Dairy Appliances		26	5 0	31 1
Ditto Milk and Butter Tests		25	0 0	34 1
		75	9 0	91 1
Produce Sales, &c.		13	0 0	10 1
				100 2 6
				125 1
CIDER:—				
Entry Fees		..		13 17 6
				9
ADMISSIONS TO SHOW-YARD:—				
Admissions at 2s. 6d.		1,894	2 6	1,534
Ditto at 1s.		1,801	7 0	1,062
Children at 1s.		42	2 0	30
Ditto at 6d.		95	3 0	31
Season Tickets		35	12 6	34
				3,666 7 6
				3,001
Carried forward		..		2 3,007 17 4

CASH ACCOUNT—continued.

CR.

P A Y M E N T S.	1899. EXETER.			1898. CARDIFF.		
	£	s.	d.	£	s.	d.
Brought forward			7,308	7	7
CHEESE AND BUTTER:—						
Judges		12	15 0		7	1 6
Prizes		156	10 0		171	0 0
Steward and Assistants		7	15 4		12	17 5
Shedding		64	15 0		74	0 0
Printing, Stationery, Carriage, &c.		4	16 3		4	3 2
Grass Table for Butter		5	0 0		5	0 0
				251	11	7
					274	2 1
DAIRY:—						
Stewards and Assistants		52	0 1		57	11 2
Judges and Demonstrators		54	12 2		58	6 0
Building		184	14 6		183	16 0
Printing, Stationery, Postage, and Insurance		7	13 3		7	0 9
Utensils, Carriage, &c.		24	3 4		37	8 9
Prizes		52	9 2		53	9 2
Coal, Salt, Ice, &c.		6	11 11		4	8 8
Consulting Chemist for Analyses		4	10 0		7	3 3
				386	14	5
					409	3 9
CIDER:—						
Shedding and Fittings		39	12 4		28	0 0
Steward and Assistants		9	1 0		5	3 1
Judge		5	9 4		5	16 0
Prizes		10	4 2		8	19 8
Printing, &c.		5	8 3		4	10 2
Analyses		19	10 0		11	0 0
				89	5	1
					63	8 11
FEES			10	0	0
PUBLIC ANNOUNCEMENTS:—						
Advertising		189	12 9		181	3 8
Billposting		118	0 9		94	14 2
Railway Placards		33	4 8		47	13 0
Printing		57	15 8		75	1 0
Rent of Picard-Frame Stores		4	0 0		4	0 0
				402	13	10
					402	11 10
Carried forward			£ 8,448	12	6

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Dr.

CASH ACCOUNT—continued.

RECEIPTS.		1899. EXETER.		1899 CARD
	£ s. d.	£ s. d.	£ s. d.	
Brought forward		8,907 17 4		
SHOW RECEIPTS (UNAPPORTIONABLE):—				
Stand-fittings	446 5 1			341 1
Contract Premiums, &c.	315 2 6			233 1
			761 7 7	675 1
BATH, FOR 1900 SHOW		800 0 6		800
SCHOOLS:—				
SOMERSET FARRIERY:—				
	£ s. d.			
Students' Fees	9 5 0			7 1
Grant from County Council	300 0 0			300
		309 5 0		307 1
SOMERSET CHEESE:—				
Students' Fees	96 9 6			123
Cheese and Butter sold	528 7 5			679
Ditto (1897 draft)				79
Sale of Students' Note-Books	2 3 6			2
Grant from County Council	300 0 0			250
Ditto Ditto (Balance on)	79 13 5			100
1898 school)		1,006 13 10		1,023
DEVON BUTTER				32 1
			1,315 10 10	1,300
Carried forward			11,708 8 9	

CASH ACCOUNT—*continued.*

CR.

P A Y M E N T S.	1899. EXETER.		1898. CARDIFF.
	£ s. d.	£ s. d.	£ s. d.
Brought forward.	..	8,448 12 6	
SHOW EXPENSES (UNAPPORTIONABLE):—			
Erecting Offices and other Buildings	646 6 9		710 11 2
Ditto Hoarding	161 10 4		47 6 8
Carriage of Plant	124 16 2		127 5 2
Steward of Works	12 5 0		11 3 6
Stand Fittings	300 2 6		272 10 11
Extension of Telegraph Wires	4 0 7		6 12 11
Insurance of Plant	4 10 0		4 10 0
Hire of Furniture	13 4 11		12 7 0
Mess Room	5 5 0		5 5 0
Gatekeepers, Yardmen, Messengers, &c.	81 10 5		68 6 2
Stewards of Finance and Treasurer	22 6 3		26 8 6
Finance Office and Treasurer's Clerks	39 17 1		38 1 8
Police	95 18 0		98 7 6
Badges	4 15 5		3 5 0
Catalogues for Press and Officials	7 18 8		5 12 0
Purchase of Plant	55 18 11		9 0 1
Printing and Stationery	46 5 7		39 11 4
Commission on Sale of Season Tickets.	0 19 6		3 0 10
Cartage and Sundries	5 2 2		4 8 7
Local Committee Expenses.	6 3 3		10 17 8
Gas Mains	20 0 0		..
		1,658 16 6	1,502 11 8
SCHOOLS:—			
SOMERSET FARRIER:—	£ s. d.		
Instructor	133 14 8		135 5 5
Veterinary Surgeon.	31 10 0		31 10 0
Coal, Iron, &c.	14 12 11		19 10 7
Carriage and Cartage	12 0 6		17 8 6
Rent of Yards and hire of Horses	15 4 6		17 17 0
Prizes and Judges at Competition	14 17 6		21 19 10
Printing, Stationery, Postage, Office and Travelling Expenses }	65 6 0		73 7 5
Plant, Repairs, and Fittings	3 4 9		14 15 6
	290 10 0		331 14 3
SOMERSET CHEESE:—			
Salaries and Expenses	134 1 6		135 10 0
Steward's Time and Expenses	57 11 8		58 13 4
Supervisor's Expenses	..		15 0 0
Balliff's Wages	46 15 0		50 9 4
Office Staff and Travelling	33 2 8		29 10 6
Milk	530 10 0		500 0 0
Rennet, Bandages, Coal, Salt, &c.	19 10 3		11 18 3
Carriage of Plant	6 1 1		3 13 10
Printing, Stationery, Advertising, Postages and Telegrams }	20 6 1		15 8 1
Students' Board	62 7 4		85 10 0
Repairing and replacing Plant and Fittings }	31 13 4		27 1 1
Lime and Labour	..		26 11 3
Returned to Somerset County Council	24 0 0		..
	970 18 11		959 4 8
		1,261 9 9	1,290 18 11
Carried forward	..	£ 11,368 18 9	

CASH ACCOUNT—*continued.*

CR.

P A Y M E N T S.		1899. EXETER.		1898. CARDIFF.	
		£ s. d.	£ s. d.	£ s. d.	
Brought forward		..	11,369 18 9		
EXPERIMENTS:—					
FIELD:—	£ s. d.				
Rent of Fields	18 18 0				
Manures, Seeds, and Cattle Food	19 8 1			2 17 3	
Printing and Stationery	23 5 0			28 16 2	
Stewards' Time, Travelling, Post- age, &c.	26 15 7			22 0 1	
Secretary, Office, and Travelling	25 0 0			25 9 1	
Consulting Chemist	11 13 4			8 11 8	
Botanical Visitor	20 5 0			18 6 7	
Bacteriologist	2 16 0			..	
Labour, Cattle, and Occupier's Ex- penses	34 0 6			..	
		182 1 6		106 0 10	
CIDER:—					
Expert	80 0 0			80 0 0	
Fittings	18 0 0			19 6 6	
Office and Travelling	11 0 0			9 6 8	
Printing and Drawings	13 8 0			17 7 0	
		120 8 0		126 0 2	
CHEESE:—					
Expert for Report	50 0 0				
Printing	33 5 6				
		83 5 6		368 19 5	
			385 15 0	601 0 5	
			11,754 13 9	11,453 2 1	
Balance in Bank, Dec. 31		..	754 6 3	373 16 3	
			£12,509 0 0	11,826 18 4	

I hereby certify that I have examined the foregoing accounts for the year ending Dec. 31st, 1899, compared the payments entered with the vouchers, and found them all in order and correct.

Jan. 18th, 1900.

ALBERT GOODMAN, F.C.A.,

Auditor.

Passed by Council,

Jan. 30th, 1900.

THOS. F. PLOWMAN,
Secretary.

Bath and West and Southern Counties Society,

FOR THE

Encouragement of Agriculture, Arts, Manufactures, and Com

List of Members.

CORRECTED TO JANUARY 31ST, 1900, INCLUSIVE.

PATRON.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, I

PRESIDENT

FOR 1899-1900.

THE MOST HON. THE MARQUESS OF BATH.

TRUSTEES.

RIGHT HON. SIR R. H. PAGET, BART.

RIGHT HON. THE LORD CLINTON.

Names thus () distinguished are Governors.*

Names thus (†) distinguished are Life Members.

* * * *Members are particularly requested to make the Secretary acquainted with any errors in the names or residences.*

Name.	Residence.	Subscription.
† WALES, HIS ROYAL HIGHNESS THE PRINCE OF, K.G. . . .	Sandringham, Norfolk	£
† York, H.R.H. The Duke of, K.G.	York Cottage, Sandringham . . .	.
Abbot, G.	The Priory, Abbots Leigh, Bristol	1
† Ackers, B. St. John	Huntley Manor, Huntley, near Gloucester . . . . .	.
Acland, Sir H. W., Bart., K.C.B., M.D., &c. . . .	Broad Street, Oxford	1
Acland, Alfred Dyke	3, Cadogan Square, London, S.W.	1
* Acland, Sir Charles T. D., Bart.	Holnicote, Taunton	5
† Acland, Rt. Hon. A. H. Dyke, M.P.	28, Cheyne Walk, London, S.W.	.
Adams, E.	Horner Farm, West Luccombe, Minehead	0 10

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VOL. X.—F. S.

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Name.	Residence.	Subscriptions.	
		£	s. d.
Adams, George	Royal Prize Farm, Pidnell, Faringdon, Berks	1	0 0
Adams, S. W., jun.	7, Boringdon Villas, Plympton St. Mary	1	1 0
*Addington, Lord	Addington House, Winslow, Bucks.	2	2 0
*Addington, Hon. G.	Upottery Manor, Honiton	2	0 0
Affleck, F. and T.	Swindon	1	0 0
†Agate, Alfred	Broomhall, Horsham . . . . .	..	..
Aiken, J. C.	The Glen, Stoke Bishop, Bristol	1	0 0
†Aitken, G. H.	Warminster . . . . .	..	..
Alexander, D. T.	Cardiff	1	1 0
†Allen, Col. R. E.	10, Hanover Square, London, W. . . . .	..	..
†Allen, James D.	Springfield House, Shepton Mallet . . . . .	..	..
*Allen, J.	Park Place, Cardiff	2	0 0
Allen, W. T.	West Bradley, Glastonbury	1	0 0
Allmand, F.	Victoria Flour Mills, Wrexham	1	0 0
*†Amherst, Earl	Montreal, Sevenoaks . . . . .	..	..
Anglo-Bavarian Brewery Co.	Shepton Mallet	1	0 0
Anglo-Swiss Condensed Milk Co.	Chippenham	1	0 0
Archer, C.	Trelaske, near Launceston	1	0 0
†Arkwright, J. H.	Hampton Court, Leominster . . . . .	..	..
Armitage, C. W.	The Woodlands, Northaw, Potters Bar	1	0 0
Armitage, S. H.	Upper Newton, Kinnersley, Hereford	1	0 0
Armstrong, J. D.	Vallis Farm, Frome	1	0 0
Ashburton, Lord	The Grange, Alresford, Hants	1	0 0
†Ashcombe, Lord	7, Prince's Gate, London, S.W. . . . .	..	..
Ashcroft, W.	13, The Waldrons, Croydon	1	0 0
Ashford, E. C., M.D.	The Moorlands, Bath	1	0 0
Aubrey, T., F.R.C.V.S.	19, Paragon, Bath	1	0 0
†Aveling, Thomas L.	Rochester . . . . .	..	..
Avon Manure Co.	St. Philip's Marsh, Bristol	1	0 0
Awdry, P. D.	Chippenham	1	0 0
Ayshford-Wise, Major Lovat	Watts House, Bishop's Lydeard	1	1 0
Baber, S.	Elborough Farm, Locking, Weston-super-Mare	1	0 0
Badcock, H. Jeffries.	Taunton	1	0 0
Badcock, W. L.	Pitminster Lodge, Taunton	1	0 0
Bailey, H.	St. Stephens, St. Albans	1	0 0
Bailey, J.	Nynehead, Wellington, Somerset	1	0 0
Bailward, F. H. M.	Horsington, Wincanton	1	1 0
†Bainbridge, Captain J. H.	Gnaton Hall, Yealampton, Plymouth

Subscriptions.

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Name.	Residence.	Subscriptions.		
		£	s.	d.
F.	Manor Farm, Frindsbury, Rochester	1	0	0
G. E. Lloyd	Hardwicke Court, nr. Gloucester.	1	0	0
L. J.	Ottershaw Park, Chertsey, Surrey			
Robert N. G.	Heavitree, Exeter			
William	Eastbury, Epsom Road, Guildford	1	0	0
Samuel	Westacott Nursery, Barnstaple	1	0	0
r, Captain K. R.	Branksea Island, Poole	1	0	0
on, W. E.	Barvin, Potters Bar, Herts.	2	0	0
rd, H., and Sons.	Uttoxeter	1	0	0
tt, A. C.	Thirsk, Yorkshire	1	0	0
ng, Major A. C. Greaves	Eastbrook, Taunton	1	1	0
d and Perkins.	Peterborough	1	0	0
n, G. T.	College Farm, Finchley	1	0	0
, Hon. A. H.	The Grange, Alresford, Hants	1	0	0
t, Major William	Moredon, North Curry, Taunton	1	0	0
, Mrs. W.	Taplow House, Bucks	1	0	0
w, J. J. J.	The Lodge, Weston-super-Mare	1	1	0
lot, Sir Walter, Bart.	Coates, Pulborough, Sussex	1	1	0
tt, C. H.	Pilton House, Barnstaple			
rd, B. J. P.	Kitley, Yealmpton, Ivybridge	2	0	0
lor, F. J.	Hopwood Stud Farm, Alvechurch, Worcester	1	1	0
i, Marquess of	Longleat, Warminster			
nd Wells, The Bishop of	The Palace, Wells	1	1	0
Gas Co.	Bath	1	0	0
rst, C., jun.	Lydney Park, Glos.	1	0	0
A.	Westown, Bristol	1	0	0
i, Col. Mount. . . . .	. . . . .	1	0	0
-Pooll, R. H.	Road Manor, Bath	1	0	0
hill, W. J.	St. Loyes, Exeter			
on, Edward	Broadway, Dorchester	1	0	0
dale, F. H.	Hailwell Farm, Framfield, Sussex	1	0	0
z, R.	Torr Grove, Plymouth			
camp, E. B.	Trevince, Redruth	1	0	0
fort, Duke of	Badminton, Glos.	2	2	0
y, M. H., M.P.	Coombe Priory, Shaftesbury	1	0	0
s, A. E.	Ethorpe, Gerrard's Cross, Bucks.	1	1	0
-Stanford, J.	Pyt House, Tisbury	1	1	0
t Brothers	Journal Office, Salisbury	1	1	0
i, J.	The Dairy, Vale Road, Buxton	1	0	0
l, Edward H., and Co.	Heybridge, Maldon, Essex	1	0	0
on, J. Herbert	Englefield House, Reading	5	0	0
ie, Lord	18, Moore Street, Cadogan Square, London			
ier, H. W.	Roselands, Woolston, Southampton	1	0	0
Capt. John C. (R.N.).	Plas-yn-Vivod, Llangollen			
Col. George	Charlton House, Ludwell, Salisbury			
Major M. G.	Park House, Boxley, Maidstone	1	0	0
Captain T. G.	Abbot's Ann, Andover	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
†Best, Lieut. W.	The Barracks, Wrexham	1 0 0
Beviss, W. Salter	Linnington, Wambrook, Chard	0 10 0
Bigg, Thomas	Leicester House, Great Dover Street, London, E.C.	0 10 0
Birmingham, C.	Holnicote, near Minehead	1 0 0
Biscoe, H. S. T.	Holton Park, near Oxford	1 0 0
Blackstone and Co. (Limited)	Rutland Iron Works, Stamford, Lincoln	1 0 0
Blake, H. L. T.	Fairfield, Bridgwater	1 0 0
Blake, William	Bridge House, Ilminster, South Petherton	1 0 0
Blyth, Sir J., Bart.	33, Portland Place, London, W.	1 0 0
Board, J.	Hill Farm, East Pennard, Shepton Mallet	1 0 0
Boby, Robert.	Bury St. Edmunds, Suffolk	1 0 0
Bolden, Rev. C.	Preston Bissett, Buckingham	1 0 0
Bolitho, T. B., M.P.	Trewidden, Penzance	1 0 0
Bond, E.	Hele, Cullompton	1 0 0
†Bond, N.	Creech Grange, Wareham, Dorset	1 0 0
Boscawen, Rev. A. T.	Ludgvan Rectory, Long Rock, Cornwall, R.S.O.	2 0 0
*Boteler, Capt. W. J. Cas- berd	The Elms, Taplow	1 1 0
†Boughton-Knight, A. R.	Downton Castle, Ludlow	1 1 0
Bound, William	Hurstborne Tarrant, Andover	1 1 0
Bouverie, Hon. D. P.	Coleshill House, Highworth	1 0 0
Bouverie, H. P.	Brymore, Bridgwater	1 0 0
†Bowen-Jones, J.	Leckbury, Shrewsbury	1 0 0
†Bowerman, Alfred	Capton, Williton	1 0 0
Bowerman, F.	Knott Oak House, Ilminster	1 0 0
Boyle, M.	Timsbury, Bath	1 0 0
Braby, E. E.	Drungewick Manor House, Horsham, Sussex	1 0 0
Bradford, Thos., and Co.	Salford, Manchester	1 0 0
†Braikenridge, John Herman.	The Rookery, Chew Magna, Bristol	1 1 0
Braikenridge, W. J.	Newton House, Clevedon, Somerset	1 0 0
Brain, S. A.	Old Brewery, Cardiff	1 0 0
†Brassey, A., M.P.	Heythrop, Chipping Norton, Oxon	1 0 0
*†Brassey, H. L. C.	Preston Hall, Aylesford, Kent	1 0 0
Brenton, W., and Co.	Polbathic, St. Germans	1 1 0
Bristol Wagon Works Com- pany (Limited)	Lawrence Hill, Bristol	1 0 0
Britten, Admiral R. F.	Kenswick, Worcester	1 0 0
†Broadmead, W. B.	Enmore Park, Bridgwater	1 0 0
Brockman, F. D.	Beach Borough, Hythe, Kent	1 0 0
Broderip, E.	Cossington, Somerset	1 1 0
Brown, A.	Hill Farm Dairy, Southampton	1 0 0
Brown, J.	Marden Farm, Hertford	1 0 0
Brown, William Jeffery	Middlehill House, Box, Wilts	1 0 0
Browne, P. J.	Zenals House, Bath	1 0 0
Brune, C. G. Prideaux	Prideaux Castle, Padstow	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
n, J.	7, Princes Street, Yeovil	1 0 0
, J. P.	58, Princes Gate, London, S.W. . .	. . .
er, William E., M.P.	Ilslington House, Dorchester . . .	. . .
A.	Worcester	1 0 0
ingham, Rev. F. F.	The Rectory, Doddiscombaleigh, Exeter . . . . .	. . .
ingham, W.	Millbrook Farm, North Molton . .	1 0 0
y, W. J.	Llanelly	1 0 0
ell, B.	Holcombe Rogus, Wellington, Somerset	1 0 0
H. C.	Land Surveyor, Shepton Mallet . .	1 0 0
J. E.	Tidebrook Manor, Wadhurst, Sussex	1 0 0
r, Admiral A.	Erle Hall, Plympton . . . . .	. . .
ge, W.	Chippenharn	1 0 0
lere, Lord. . . . .	. . . . .	1 0 0
d. R.	Cattedown, Plymouth	1 0 0
H. Holland	Marlborough Buildings, Bath . . .	1 0 0
t, J.	Island House, Highbridge	1 0 0
l, C., and Sons	St. Nicholas Works, Thetford . . .	1 0 0
ll, Sir C. R., Bart.	Knepp Castle, Sussex . . . . .	. . .
Mrs. L. E.	Ellaston, Atlantic Road South, Weston-super-Mare	1 1 0
ll, C. and W.	Torquay	1 0 0
er, G., and Co.	Bath	1 0 0
worth, R. W.	Percy House, Kensington, Bath . .	1 0 0
un, J. H.	20, Green Park, Bath	1 0 0
H. and J.	Knutsford, Cheshire	1 1 0
t, Col. A. M.	Ockley Court, Dorking	1 0 0
ell, C. Lee	Chadlington, Oxon.	1 0 0
on, W. H.	Danney, Hassocks, Sussex	1 0 0
, T. C.	Woolcombe, Cattistock, Dorset . .	1 0 0
a, H.	Milton Clevedon, Evercreech . . .	1 0 0
C.	Collipriest, Tiverton.	1 0 0
, P. W.	Cardiff . . . . .	. . .
von, Earl of	Highclere Castle, Newbury	1 1 0
.	Court-y-bel, Penarth, Glam. . . .	1 0 0
.	Estate Office, Tring Park, Herts. .	1 0 0
t, E.	Puckpool House, Ryde, Isle of Wight . . . . .	. . .
J., and Co.	238, High Holborn, London	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
†Cartwright, F. F.	7, Percival Road, Clifton			
Carver, H. R.	West House, Chilton Polden, Bridgwater	1	0	0
Cary, Edmund	Pylle, Shepton Mallet	0	10	0
†Cary, W. H.	Steeple Ashton, Trowbridge			
Cater, R. B.	Bath	1	1	0
†Catt, C. W.	52, Middle Street, Brighton (Hon. Local Sec., 1885)			
Cecil, Lord A.	Orchardmains, Tunbridge	1	0	0
Cecil, Lord L.	Orchardmains, Tunbridge	1	0	0
Chadwyck-Healey, C. E. H.	New Place, Porlock, Somerset	1	0	0
*Chaloner, Capt. R. G. W., M.P.	Melksham House, Melksham, Wilts	2	0	0
†Chapman, C.	Carlecotes Hall, Dunford Bridge, near Sheffield			
Chapman, Rev. H.	Donhead St. Andrew, Salisbury	1	0	0
Chapman, W. W.	Fitzalen House, Arundel Street, Strand, London	1	0	0
Cheetham, F. H.	Tetton House, Kingston, Taunton	1	1	0
Chester-Master, Col. T. W.	Knowle Park, Almondsbury	1	0	0
Chick, John	Compton Valence, Dorchester	1	1	0
Chorley, W. L.	Quarme, Dunster, Somerset	1	0	0
*Clarendon, Earl of	The Grove, Watford	2	2	0
Clark, Isaac	West Lynch, Selworthy	1	0	0
Clark, James	Street, Glastonbury	1	0	0
†Clark, J. J.	Goldstone Farm, West Brighton (Hon. Local Sec., 1885)			
Clark, W. S.	Street, Glastonbury	1	0	0
Clarke, A. J.	100, New Bond Street, London	1	1	0
Clarke, Captain J. S.	Langley Lodge, Chippenham	1	0	0
Clarke, Joshua	Minehead	1	0	0
†Clarke, Capt. T. E.	Alcombe, Cote, Dunster			
Clarke, W.	East Lynch, near Minehead, Somerset	1	0	0
Clarke, W. Hurle	Manor Cottage, Wanstrow, Somerset	1	1	0
Clayden, H.	Northoe, Park View, Hoddesdon	1	1	0
*Clayton, Shuttleworth, and Co.	Lincoln	2	2	0
Cleave, W. C.	Sanctuary, Crediton, Devon	1	1	0
Cleaver, Capt. J. H.	Cannon Street Hotel, London, E.C.	1	0	0
Clerk, Edmund H.	Burford, Shepton Mallet	1	0	0
Clerk, Lt.-Col. R. M.	Charlton House, Shepton Mallet	1	0	0
*Clifden, Viscount	19, Wilton Street, London, S.W.	2	0	0
†Clifford, Lord	Ugbrook, Chudleigh			
*Clinton, Lord	Heanton Satchville, Dolton, North Devon	2	2	0
Clout, R.	Brome House, West Malling, Kent	1	0	0
Clutton, Robert Geo.	9, Whitehall Place, London	0	10	0
Clutton, R. W.	Doner's Lodge, Reigate	1	0	0
Coates, S. B.	Stanton Drew Court, Pensford	1	0	0
Cobb, H. M.	Higham, Kent	1	0	0

Subscriptions.

CXXXV

Name.	Residence.	Subscriptions.
		£ s. d.
.	Manor House, Winterbourne	
.	Stoke, Salisbury	1 0 0
.	Westmead, Bridport	1 0 0
.	Longhouse Farm, Oldford, Frome	1 0 0
R.	Hartwell House, Exeter	1 1 0
.	Newton Ferrars, Carrington, Corn-	
	wall	1 1 0
3., M.P.	Roundway Park, Devizes	2 2 0
Symons, and Co.		
1)	Bridgwater	1 0 0
. K.	Bellaport Hall, Market Drayton .	1 0 0
. H.	Pierrepont, Farnham	2 0 0
Robert F.	The Poplars, Pucklechurch, Bristol	1 0 0
.	Chevithorne Barton, Tiverton . .	1 1 0
.	Chevithorne Barton, Tiverton . .	1 1 0
W. Radcliffe, M.P.	Helens, Herefordshire, <i>viâ</i>	
	Dymock, Glos.	1 0 0
H. T.	Sturford Mead, Warminster . . .	
., and Son	Northgate Street, Bath	1 1 0
. W. D.	99, Pembroke Road, Clifton . . .	
. P.	Shenstone Court, Lichfield . . .	
R.	More Place, Betchworth, Surrey.	1 0 0
Thomas.	Perseverance Iron Works, Shrews-	
	bury	1 0 0
V.	36, Southwark Street, London . .	1 0 0
Orrery, The Earl of	Marston, near Frome	2 2 0
. W.	Manor House, Inglescombe, Bath	
. J.	Abbey Churchyard, Bath	1 0 0
s, F. S. W.	Linton Park, Maidstone	
.	Llantarnam Abbey, Mon.	1 0 0
B.	Druidstone, Castleton, Cardiff .	2 0 0
l., the Hon. R. S. .	Somerford Hall, Brewood, Staffs .	1 0 0
.	Cottrell & Co., Hungerford . . .	1 0 0
. P.	Perseverance Works, Grantham .	1 0 0
Raymond	Shenfield Place, Brentwood, Essex	
Hon. H. L.	Fox, Fowler's Bank, Exeter . . .	1 0 0
er, Lieut.-Col. G. .	Westwood, Guildford, Surrey . .	
The Earl of	Croome Court, Severn Stoke,	
	Worcestershire	2 0 0
. J.	Barnet, Herts.	1 0 0
.	Pwlpfen Farm, Christchurch,	
	Newport, Mon.	0 10 0
s	Rosewell Farm, High Littleton,	
	Bristol	1 0 0
.	Messrs. G. Cradock & Co., Wake-	
	field	1 0 0
.	Winford Tower, Beaworthy,	
	R.S.O., Devon	0 10 0
W. T.	Caversham Park, Reading	1 0 0
mas	Great Ash, Winsford, Dulverton	0 10 0
. W.	Tedford Farm, Batcombe, Cattis-	
	tock, Dorset	1 0 0

Name.	Residence.	Subscriptions.
		£ s. d.
Crofts, D. J.	Sutton Montis, Sparkford, Bath .	1 0 0
Crookshank, Prof. E. M. . . .	King's College, London. . . .	1 0 0
Crowley, J., and Co.	Meadow Hall Iron Works, Sheffield	1 0 0
Crutchley, P. E.	Limminghill Lodge, Ascot	1 0 0
Culverwell, E. T.	Durleigh Farm, Bridgwater . . .	1 0 0
Cuming, A. P.	Moreton Hampstead, Devon . . .	1 0 0
Cundall, H. M., F.S.A.	Richmond, Surrey	1 0 0
Cundall, R. and Sons (Ld.) . . .	Airedale Ironworks, Shipley . . .	1 0 0
Custance, Mrs. M.	Woodlands, Southwater, Horsham .	1 0 0
Cutcliffe, G.	Coombe House, Witheridge, N. Devon	1 1 0
Dairy Outfit Company (Ld.) . . .	King's Cross, London	1 0 0
Dairy Supply Company (Ld.) . . .	Museum St., Bloomsbury, London .	1 0 0
Damerel and Soa.	161, Sidwell St., Exeter	1 0 0
Dampney, G. D.	Hinton, Ilchester.	1 0 0
Danger, Thomas	Rowford Lodge, Taunton	1 0 0
Daniel, Rev. H. A.	Manor House, Stockland, Bridgwater	1 0 0
† Daniel, H. T.	Manor House, Stockland, Bridgwater	
Daniel, Thos. C.	Stuckridge, Bampton, North Devon	1 1 0
Darby, A. E. W.	Little Ness, Shrewsbury	1 0 0
Darby, E.	Liscombe, Dulverton	1 0 0
Darby, S. R.	Merafield, Martock, R.S.O. . . .	1 0 0
† Davenport, Rev. George	Foxley, Hereford	
† Davey, J. Sydney	Brockym House, Helston, Cornwall .	
Davey, Sleep, and Co.	Excelsior Plough Works, Plymouth	1 0 0
Davey, T.	Beere Manor, Cannington, Bridgwater	1 0 0
Davies, J. N.	Gweleath, Cury, R.S.O., Cornwall .	1 0 0
Davis, F. L.	7, Bute Crescent, Cardiff	1 1 0
Davis, H. J.	Tivoli, Newport, Mon.	1 0 0
Davis, H. J.	Doulting, near Shepton Mallet . .	1 0 0
Davy, W.	Tracy Park, Bristol	
Daw, G.	Larkbere Farm, Ottery St. Mary, Devon	1 0 0
Daw, R. R. M.	Spurbarne, Exeter	1 0 0
Dawson, W. and F.	Market Place, Bath	1 1 0

Name.	Residence.	Subscriptions.
		£ s. d.
nd Sons	Crewe	1 0 0
John.	Huxham, E. Pennard, Shepton Mallet	1 0 0
Son, and Hewitt	22, Dorset St., Baker St., London . . . . .	..
on, W. A.	20, Birchin Lane, London, E.C. . . . .	..
S.	Newport, Mon.	1 0 0
aquiere, Lord	3, The Circus, Bath	1 0 0
roke, Lord Willoughby	Compton Verney, Warwick . . . . .	..
tto, Col.	Brook Lodge, Holm Wood, Dorking, Surrey	1 0 0
x, Rev. A. F.	Meshaun Rectory, S. Molton	1 0 0
Warr, Countess	Buckhurst, Withyham, Sussex	1 1 0
ornay, A.	Col d'Arbres, Wallingford	1 0 0
urrietta, A.	Wadhurst Park, Hawkhurst, Sussex . . . . .	..
r, Rev. Samuel	Lattiford House, Wincanton	1 0 0
g, C., and Co.	Chard, Somerset	1 0 0
y, The Earl of	Knowsley, Prescot . . . . .	..
itre, H. Denis	Charlton House, Wantage . . . . .	..
onshire, Duke of, K.G.	Chatsworth, Derbyshire	5 0 0
ason, R. E., M.P.	Coombe Cottage, Greenway Lane, Bath	1 1 0
ason, W.	Kingweston, Somerton	1 0 0
on's, Limited	Chester	1 1 0
y, Lord	Minterne, Cerne Abbas . . . . .	..
, J. K.	Sherborne Castle, Sherborne	1 0 0
, J. K. W., M.P.	Sherborne Castle, Sherborne	1 0 0
G. D., jun.	Manor Farm, Bathford, Bath	1 0 0
tt, J. R.	Tavistock . . . . .	..
on, W. V.	Perridge House, Shepton Mallet . . . . .	..
gton, R. M.	Horsington House, Templecombe	1 1 0
ng, F. H.	Hedge Farm, Pyllie, Shepton Mallet	1 0 0
, T. C.	Elm Grove, Dawlish	1 0 0
e, James	Melrose, Glastonbury	1 0 0
e, A. F. Milton	Bladon, Woodstock . . . . .	..
mond, H. W.	Syon House, Budleigh	1 0 0
e, Earl of	Tortworth Court, Falfield, R.S.O., Glos.	2 0 0
ham, T.	Halmer, Hereford . . . . .	..
worth, Rev. W. A.	Orchardleigh Park, Frome	2 0 0
orth-King, Sir D., Bart.	Wear House, near Exeter	1 0 0
le, Major A. G.	Stock House, Sturminster Newton	1 0 0
oyne, Lord	Greendale, Clyst St. Mary, Exeter . . . . .	..
garvan, Viscount	40, Charles Street, London, W. . . . .	..
William	Frome	1 1 0
ng, E. H.	Stoodleigh Court, Stoodleigh, N. Devon	1 0 0
ng, Major R. H.	Lapford Wood, Lapford, North Devon	1 0 0
aven, Earl of	27, Norfolk Street, Park Lane, London, W.	2 2 0

Name.	Residence.	Sub- scriptions.
		£ s. d.
†Durrant, Edward	Tunbridge Wells (Hon. Local Sec. 1881) . . . . .	..
Dyke, Thomas	Long Ashton Lodge, Clifton, near Bristol	1 0 0
*Dyke, Rt. Hon. Sir W. Hart, Bart., M.P.	Lullingstone Castle, Eynsford. .	2 2 0
†Dymond, Edward E. . . .	Oaklands, Aspley Green, Bletch- ley	1 0 0
Dymond, Francis W. . . .	Bampfylde House, Exeter. . .	1 0 0
Eagle Range and Foundry Co. (Limited)	Catherine Street, Aston, Birming- ham	1 0 0
Eastment, A. C.	Horsington, Templecombe. . .	1 0 0
Easton and Bessemer (Ld.) .	Taunton.	1 0 0
Easton, Richard	Heale Mount, Taunton. . . .	1 0 0
Eddy, J.	Kenuford Ironworks, Exeter . .	1 0 0
Eden, R. H. H.	Heytesbury, Wilts	1 0 0
Edgar, Frank	Polden Hill Dairy, Chilton Polden, Bridgwater	1 0 0
†Edgcumbe, Sir E. Robt. P. .	Sandye Place, Sandy	1 0 0
Edmonds, W.	Wiscombe Park, Honiton . . .	1 0 0
†Edmondson, A.	Tubney Warren Farm, Abingdon .	..
Edwards, C. L. Fry	The Court, Axbridge, Somerset .	1 0 0
Edwards, A. P.	Hutton, Weston-super-Mare . .	1 0 0
Edwards, Jas.	Belmont, Flax Bourton, near Bristol	1 0 0
Edwards, W. H. G.	Butcombe Court, Wroughton . .	1 0 0
†Egmont, Earl of	Cowdray Park, Midhurst, Sussex	..
Eldridge, Pope, and Co. . .	Dorchester	1 0 0
*Elliot, H. E. Tracey	Leigham House, Plympton . . .	2 2 0
Ellis, J.	Maidstone	1 0 0
*Elton, Sir E., Bart.	Firwood, Clevedon	2 2 0
Elworthy, C.	Stone Farm, South Molton . . .	0 10 0
Enys, F. G.	Enys, Penryn, Cornwall	1 0 0
Esdaile, C. E. T.	Cothelstone House, Taunton . .	1 0 0
Evans, Daniel	Winsford, Dulverton	0 10 0
†Evans, Sir David, K.C.M.G. .	Ewell Grove, Surrey . . . . .	..
Evans, W. H.	Ford Abbey, Chard	1 0 0
†Evan-Thomas, Commander A.	Cae Rwnon, Builth . . . . .	..
Evered, P.	Milton Rocks, Dulverton . . .	1 0 0

Subscriptions.

CXXXIX

Name.	Residence.	Sub- scriptions.
M.	Woodram Farm, Pitminster, Taunton	£ s. d. 1 0 0
er, S. W.	Little Bedwin, Wilts	1 0 0
l, Capt. W.	The Priory, Burnham, Bucks.	1 0 0
ll, F. Geo.	Laura Place, Bath . . . . .	. . .
E.	Ludlow Estate Offices, Downton Castle, Bromfield, Salop.	1 0 0
G.	Milton Manor, Pewsey, Wilts	1 0 0
apt. W.	Langton Hall, Northallerton, Yorks.	1 1 0
, F.	St. Martins House, Wareham.	1 0 0
G. P.	The Briars, Alphington, Exeter	1 1 0
, Alexander	Little Brickhill, Bletchley, Bucks	1 0 0
t. W.	Westwood Court, Faversham.	1 0 0
George J.	Churston Court, near Brixham, Devon	1 0 0
E.	Mendip Lodge, Langford, Somerset	1 0 0
Col. H. Oakdene	Ty Mynddi, Radyr., near Cardiff.	1 0 0
r, C. E.	Kenward, Yalding, Maidstone	1 0 0
er, Lionel J. W.	Ewell Manor, West Farleigh, Maidstone . . . . .	. . .
r, W. J.	The Chantry, Wimborne	1 0 0
, James	Chilmark, Salisbury	1 0 0
, R. F.	The Hill, Stratford-on-Avon	1 0 0
, Rev. Canon.	Worth Vicarage, Dover	1 1 0
, W. R.	West Stafford, Dorchester	1 1 0
s and Bate (Limited)	Gorton, Manchester	1 0 0
A.	Wraxall Court, Nailsea, near Bristol	1 0 0
ster, Capt. F. W.	Pilmore Hall, Darlington . . . . .	. . .
, R.	St. Fagans, Cardiff	1 0 0
, J. C.	Clatford Mills, Andover	1 0 0
, W. S.	Gore Court, Maidstone	1 0 0
cue, Earl	Castle Hill, South Molton	2 0 0
Harter, G. L.	Puckrup Hall, Tewkesbury	1 0 0
R. L.	Wells, Somerset	1 1 0
Bros.	The Oil Mills, Gloucester	1 1 0
W.	Ripple Vale, Deal, Kent	1 0 0
W.	Mel Valley, Wake Green Road, Moseley	1 0 0
and De la Perrelle	Gloucester Square, Southampton	1 0 0
r, G.	Claremont, Taunton. . . . .	. . .
J., and Co. (Limited)	Leeds	1 0 0
W. H.	Claremont, Taunton.	1 0 0
others and Co.	Wellington, Somerset	1 0 0
L.	Rumwell Hall, Taunton	1 0 0
r. A. E. W.	16, Gay Street, Bath	1 1 0
Robert	Falmouth . . . . .	. . .
t, C. T.	Hinton Charterhouse, Bath	1 1 0
t, E. T. D.	Hinton Charterhouse, Bath	1 1 0
en, Col. C. R.	Clemenstone, Bridgend . . . . .	. . .
u, J. N.	Bussell's Farm, Huxham, Exeter	1 0 0

Name.	Residence.	Sub- scriptions.
Fricker, J. A.	Burton, Mere, Wilts.	£ s. d. 1 0 0
Froom, Robert	Yondercott Farm, Uffculme, Devon	0 10 0
Frost, Adam E.	Ottery Villa, Pentonville, New- port, Mon.	1 0 0
Fry, H. A.	19, Monmouth Place, Bath	1 0 0
*Fry, J. F.	Fords Abbey, Chard	2 0 0
†Fryer, William Rolles	Verwood Manor, Salisbury . . . . .	. . .
Fuller, E. R.	Bathford, Bath	1 1 0
†Fuller, G. Pargiter.	Neston Park, Corsham . . . . .	. . .
*Fuller, J. M.	Neston Park, Corsham	2 0 0
Fuller, S. and A.	Bath	1 0 0
Fursdon, Charles	Fursdon, Tiverton, Devon.	1 0 0
Fursdon, E. S.	Posbury House, Crediton	1 1 0
†Galloway, W. G.	Cridland Farm, Spaxton, Bridg- water . . . . .	. . .
Gardiner, Sons, and Co.	Nelson Street, Bristol	1 1 0
Gardner, Major H.	Broomfield, Tiverton	1 0 0
Gardner, W. E.	Bedminster, Bristol	1 1 0
*Garratt, Lt.-Col. T. A. T.	Bishop's Court, Exeter	2 2 0
Garth, T. C.	Haines Hill, Twyford	0 10 0
Garton, J. W.	Langhorne, Sneyton Mallet	1 1 0
Garton, W.	Roselands, Woolston, Southamp- ton	1 1 0
Gaymer, W.	Messrs. W. Gaymer & Son, Attle- borough	1 0 0
Gear, W. H.	Union Street, Bath	1 1 0
Gee, B. G. H.	Lock's Mill House, near Bristol	1 0 0
George, F. B.	Swan Hotel, Wells, Somerset.	1 0 0
*†George, William E.	Howe Croft, Stoke Bishop, Bristol . . . . .	. . .
Gerrish, J.	Chipping Sodbury	1 0 0
†Gibbons, B. G.	Tunley Farm, Bath . . . . .	. . .
Gibbons, George.	Tunley, near Bath	1 0 0
†Gibbs, Antony.	Tyntesfield, Bristol . . . . .	. . .
Gibbs, H. J.	Milford, Salisbury	2 2 0
Gibbs, H. M.	Barrow Court, Flax Bourton, R.S.O., Somerset . . . . .	. . .
Gibbs, H. W.	The Briars, Bath	1 1 0
Gibson, Denston	The Fields, Harbury, Leamington	1 1 0
Gibson, J. T.	Havvet Lodge, Langford, R.S.O., Somerset	1 0 0
Gibson, Sir W., Bart.	Cambridge House, Regent's Park, London	1 1 0
†Gibson, D. A., B.Sc.	University Extension College, Reading	1 0 0

Name.	Residence.	Subscriptions.		
		£	s.	d.
Gilling-Gilling, Capt. T. . .	Manor House, Bathford, near Bath . . .	1	0	0
†Gladstone, J.	Bowden Park, Chippenham . . .			
*Glyn, Sir Richard G., Bart.	Gaunt's House, Wimborne . . .	2	2	0
Glynn, W. A.	Seagrove, Sea View, Isle of Wight . . .	1	0	0
Goddard, H.	Bossington, Allerford, Taunton . .	1	0	0
†Godman, C. B.	Woldringfold, Horsham . . .			
Goldman, J.	Park Hatch, Godalming . . .	1	0	0
Goldney, F. B.	Langley Burrell, Chippenham . .	1	1	0
†Goldney, G. Prior	Derriads, Chippenham . . .			
Goodden, J. R. P.	Compton House, Sherborne . . .	1	0	0
Goodford, A. J.	Chilton Cantelo, Ilchester . . .	1	0	0
Goodford, Rev. M. C. . . .	Chilton Cantelo Rectory, Yeovil . .	1	0	0
Goodman, A.	3. Hammet Street, Taunton . . .	1	0	0
Gordon, Panmure	Hatton Court, Threadneedle St., London . . .	1	0	0
Gore-Langton, W. F. . . .	2, Princes Gate, London, W. . .	1	0	0
Goring, C.	Wiston Park, Steyning . . .	1	0	0
*Goring, Rev. John	Wiston Park, Steyning . . .	2	2	0
†Gorringe, Hugh	Kingston-by-Sea, Brighton . . .			
Goschen, Right Hon. G. J., M.P.	Admiralty House, Whitehall, London . . .	1	0	0
Grant, C. E.	Bursar, King's College, Cambridge . . .	1	0	0
Grant, W. J.	Bassaleg, Newport, Mon. . . .	1	0	0
*Gray, Mrs.	3, Eastern Terrace, Brighton . . .	2	2	0
Graystone, S. W.	Backwell Hill House, Backwell, Bristol . . .	1	0	0
†Green, H. L.	Abergwynant Hall, Dolgelly, N. Wales . . .			
Green, R.	The Whittern, Kington, Herefordshire . . .	1	0	0
†Greenall, Mrs. C. E. . . .	Walton Hall, Warrington . . .			
†Greenall, Sir G., Bart. . .	Walton Hall, Warrington . . .			
Greenaway, J.	Ebbw Place, Ebbw Bridge, near Newport, Mon. . . .	1	0	0
Greenfield, W. B.	Haynes Park, Bedford	1	1	0
Greenham, W. N.	Overton, West Monkton, Taunton . .	1	1	0
Greenslade, W. R. J. . . .	Fairfield, Trull, Taunton . . .	1	0	0
Greenway, W.	Halse, Taunton	1	0	0
Gregory, Walter	Wellington, Somerset	1	0	0
Griffin, B.	New House, Broad Clyst, Exeter . .	1	0	0
Griffith, Col. J. G. E. . . .	Fairfield House, Cheltenham . . .	1	0	0
Griffiths, Bros.	West Place Hall, Coity, Bridgend . .	1	0	0
*†Guest, Merthyr	Inwood, Henstridge, Blandford . .			
Guille, H. G. de C. Stevens .	Little Torrington, Devon . . .	1	0	0
Guisse, Sir W. F., Bart. . .	Elmore Court, Gloucester . . .	1	0	0
Gulley, H. J.	Rodber House, Wincanton . . .	1	0	0
Guyon, Rev. H. C.	The Rectory, Lamyat, Bath . . .	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
Hall, A. H.	Chilcote Manor House, Wells, Somerset	1 0 0
†Hall, J. F.	Sharcombe, Wells, Somerset . . . . .	..
Hall, T. Farmer	39, Gloucester Square, Hyde Park, London, W.	1 0 0
Halsey, E. J.	104, Drayton Gardens, London, S.W.	1 0 0
Ham, J., jun.	Broadclyst, Exeter	0 10 0
†Hambro, Everard A.	Hayes Place, Beckenham, Kent . . . . .	..
Hamilton, Hon. Mrs. A. B.	Burley Lodge, Ringwood, Hants	1 0 0
Hamlyn, F.	Clovelly Court, Bideford	1 0 0
Hancock, C.	The Grey House, Pucklechurch, Bristol	1 1 0
Hancock, C. L.	Manor House, Cothelstone, Taunton	1 0 0
Hancock, Rev. F.	Selworthy, Somerset	1 0 0
Hancock, H. C.	Halse, Taunton	1 0 0
Hancock, R. D.	Halse, Taunton	1 0 0
*Handley, Rev. E.	Bath	2 0 0
Hankey, Col. W. A.	Beaulieu, St. Leonards-on-Sea	1 1 0
Hansard, H. W. and J.	Swansea	1 1 0
Harbord, Rev. H.	East Hoathley Rectory, Hawk- hurst, Sussex	1 0 0
Harbottle, E.	Topsham	1 0 0
Hardeman, H.	Swan Hotel, Tenbury	1 0 0
Harding, T. K.	Ashton Gifford House, Codford, Bath	1 0 0
Harding, R.	Fenswood Farm, Long Ashton, Bristol	1 0 0
Harding, Webber	Highercombe, Dulverton	1 1 0
Hardinge, Viscount	South Park, Penshurst	1 1 0
Harford, W. H.	Old Bank, Bristol	1 0 0
Harris, A.	Brownsell Farm, Stourton Caundle, Stalbridge	1 0 0
Harris, Dr. Rutherford	Llangibby Court, Newport, Mon.	1 0 0
Harrison, G.	Underpark, Lealholm, Grosmont, Yorks	1 0 0
Harrison, Major-Gen.	West Hay, Wrington, R.S.O., Somerset	1 0 0
Harrison, McGregor, and Co.	Leigh, Lancashire	1 0 0
Harrod, C. D.	Manor House, Morebath, Devon	1 0 0
Hawkes, T.	Williton, Taunton	1 0 0
†Hawkins, J. Heywood	Egnor Park, Petworth . . . . .	..
Hawkins, Rev. J. B. H.	Rectory, Chelwood, Bristol	1 0 0
†Haydon, Lieut.-Col. W. H.	Malmesbury, Wilts . . . . .	..
Hayes, F. J.	West Pennard, Glastonbury	1 0 0
Hayter, Rt. Hon. Sir A., Bart.	Trevina, Tintagel, Cornwall	1 0 0
Hayter-Hames, C. G.	Chagford, Newton Abbott	1 0 0
Heard, H.	Shepton Mallet	1 0 0
*Heathcoat-Amory, Sir J. H., Bart.	Tiverton, Devon	2 2 0
Heathcoat-Amory, I. M.	Hensleigh, Tiverton, Devon	2 2 0

Subscriptions.

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Name.	Residence.	Sub- scriptions.
Heberden, W. B., C.B. . . .	Elmfield, Exeter	£ s. d. 1 0 0
Helyar, Col. C. W. H. . . .	Poundisford, Taunton	1 0 0
†*Henderson, W.	Berkley House, Frome	1 0 0
Henry, Lt.-Col. F.	Elmstree, Tetbury	1 0 0
Hesse, F. W.	Yeomans, Wrington, East Somers- set	1 0 0
Heytesbury, Lord	Heytesbury, Wilts	1 1 0
†Hill, B. H.	Belluton House, Pensford, Bristol	1 0 0
†Hill, Charles	Clevedon, Somerset	1 0 0
†Hill, Col. E. S., C.B.	Rookwood, Llandaff	1 0 0
Hill, Edmond	Stratton House, Evercreech, Bath	1 0 0
Hill and Boll	Yeovil	1 0 0
Hill, Sidney	Langford House, Langford, R.S.O.	1 1 0
Hillman, J.	3, Gracechurch St., London, E.C.	1 0 0
Hippisley, E. M.	4, Chamberlain Street, Wells, Somerset	1 0 0
Hippisley, R. J. B.	Ston Easton Park, Bath	1 0 0
Hiscock, A., jun.	Manor Farm, Motcombe, Shaftes- bury, Dorset	1 0 0
Hiscock, E.	Ashley Farm, Marnhull, Dorset	1 0 0
*Hoare, C.	37, Fleet Street, London	2 0 0
†Hoare, Sir H. H. A., Bart.	Stourhead, Bruton	2 0 0
*Hoare, W.	Staplehurst	1 0 0
Hobbs, J. T.	Maisey Hampton, Fairford	2 0 0
*Hobhouse, H., M.P.	Hadsen House, Castle Cary	1 0 0
Hoddinott, S.	Worminster Farm, Shepton Mal- let	1 0 0
*†Hodgson, J. Stewart	Lytne Hill, Haslemere, Surrey	1 0 0
Holland and Coombs	Bristol	1 0 0
Hollond, J. R.	Wonham, Bampton, Devon	1 0 0
Holt Needham, O. N.	Castle Cary, Somerset	1 0 0
Hood, Sir A. Acland, Bart., M.P.	St. Audries, Bridgwater	1 1 0
†Hooper, R. N.	Stanshawes Court, Chipping Sod- bury	1 1 0
†Hope, W. H. B.	Eastwood, East Harptree, Bristol	1 1 0
Hopper, H. R.	48, Catford Hill, London, S.E.	1 0 0
†Horne, J. F. Fortescue	1, Whitehall Place, London, S.W.	1 0 0
Hornsby and Sons (Limited)	Grantham, Lincoln	1 0 0
Horton, J.	Rabson Farm, Winterbourne Bas- sett, Swindon	1 0 0
Horton, Rev. Le G.	Wellow Vicarage, Bath	1 0 0
Horwood, R. E.	Drayton Beauchamp, Tring, Herts	1 0 0
Hosegood, Obed., jun.	Dillington, Ilminster	0 10 0
Hosken, W. J.	Pulsack, Hayle, Cornwall	1 0 0
Hoskins, Robert.	Beard Hill, Shepton Mallet	1 0 0
Houlton, W.	Broadfield Farm, Northleach, R.S.O.	1 0 0
How, J. H.	Bideford	1 0 0
Howard, E. S.	Thornbury Castle, Glos.	1 0 0
Howard, J. and F.	Britannia Works, Bedford.	1 0 0

Name.	Residence.	Subscriptions.
Hubbard, W. E.	Leonards Lee, Horsham	£ s. d. 1 0 0
*Hudson, R. W.	Danesfield, Great Marlow . . .	3 3 0
†Hughes, A. E.	Wintercott, Leominster . . . .	. . .
Hull, R.	Sutton Benger, Chippenham . . .	1 0 0
Hunter, J.	Seed Merchant, Chester	1 0 0
†Hurle, J. Cooke	Southfield House, Brislington, Bristol . . . . .	. . .
Hurman, J.	12, Park Place, Cardiff . . . .	. . .
Hurst and Son	152, Houndsditch, London . . .	1 0 0
Hussey, John Richards . .	Beechcroft, St. Davids, Exeter .	0 10 0
†Hylton, Lord	Charlton, near Radstock . . . .	. . .
Ibbotson, R.	The Hawthorns, Knowle, Warwick- shire	1 0 0
*†Ilchester, Earl of	Melbury, Dorchester . . . . .	. . .
Imbert-Terry, H. M. . . .	Strete Raleigh, Whimble	1 0 0
Ingram, Lieut.-Col. R. B. .	Steyning, Sussex	1 1 0
Innes, J.	Merton, Surrey	1 0 0
Inskip, Jas.	Clifton Park, Bristol	1 1 0
Irby, Hon. C.	Hitcham Grange, Taplow	1 0 0
Ireland, A. C.	Brislington Hall, near Bristol . .	1 1 0
Jackson, Sir H. M., Bart. . .	Llantillio Court, Abergavenny . .	1 0 0
Jackson, W.	Manor House, Dawlish, Devon . .	1 0 0
James, A. B.	Shovell Hill House, N. Petherton, Bridgwater	1 0 0
Jarmain, T. M.	Haseley Iron Works, Tetsworth . .	1 0 0
Jarman, E. J.	Snowdon Villa, Chard	1 1 0
Jefferson, J.	Peel Hall, Chester	1 0 0
Jenkins, S. W.	Liskeard, Cornwall	0 10 0
Jenkins, Sir J. J.	The Grange, Swansea	1 0 0
Jenkins, T.	Pantyscallog, Dowlais	1 0 0
Jenkins, W. H. P.	Baglan House, Briton Ferry, S. Wales.	1 0 0
*Jewsey, Earl of	Middleton Park, Bicester, Oxon . .	2 0 0

Subscriptions.

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Name.	Residence.	Sub- scriptions.		
		£	s.	d.
, W.	Thorne, Launcelles, Stratton, Cornwall	1	0	0
' Sanitary Compounds npany	Cannon Street, London, E.C. . .	1	0	0
J.	The Firs, Shootup Hill, Bron- desbury, N.W.	1	0	0
T. D.	Chaldeans Stud Farm, St. Fagans, Cardiff	1	0	0
, E.	Cowbridge, Glamorgan	1	0	0
tone, R.	River View, Cardiff	1	0	0
s, F. N.	Crishall Grange, Saffron-Walden . .			
s, George	Ickleton, Saffron-Walden			
s, Henry Parr	Beaufort House, Winchester . . .			
, D. E.	Llancaiach House, Llancaiach, Glam.	1	1	0
, Major F. J.	Chippenham	1	0	0
W. W.	Stanton Drew, Somerset	1	0	0
, James B., and Co. . .	Journal Office, Bath	1	0	0
l, J. V.	Shaw Farm, Melksham	1	0	0
nd Co.	Gloucester	1	0	0
, F.	Salisbury Green, Southampton . .	1	1	0
le, C. A.	Timsbury, Bath	1	0	0
p, L. J.	Maer Farm, Exmouth			
away, Rt. Hon. Sir J. H., t., M.P.	Escot, Ottery St. Mary.	1	1	0
edy, D.	The Forbury, Reading	1	0	0
ey, R.	The Priory, Bathwick Hill, Bath .	1	0	0
lewell, W. W.	East Harptree Court, Bristol . . .			
er, C. E.	Aldermaston Court, Reading . . .	2	0	0
orth, J. & H., and Co. .	35, Tarleton Street, Liverpool . .	1	0	0
r, E.	Cothelstone Manor, Taunton . . .	1	0	0
r, John	Nynehead, near Wellington, Som. .	1	0	0
r, S.	Bickley Farm, Milverton, Somerset .	1	0	0
r, W.	Fennington, Kingston, Taunton . .	1	0	0
rsley, E. L.	Clyffe, Dorchester	1	0	0
G. F.	Chewton Keynsham, Bristol . . .	1	0	0
J. P.	North Stoke, Wallingford	1	0	0
R. Moss	Ashcott Park, Bridgwater	1	0	0
and Son, R.	Milsom Street, Bath	1	1	0
Sir Wm. D.	Stratford Lodge, Southsea	0	10	0
cote, T.	The Trench, Tonbridge	1	0	0
ir, H.	Redville, Swindon	1	0	0
)				
L. X.—F. S.		k		

Name.	Residence.	Sub-
		scriptions.
		£ s. d.
Knight, R.	Troytes Farm, Tivington, Mine-	
	head	0 10 0
Knight, S. J.	Dundry, Somerset	1 0 0
†Knollys, C. R.	Grange Cottage, Alresford, Hants	..
†Kruise, W.	Truro. . . . .	..
†Lake, C.	Oakley, Higham, Kent.	1 .. 0
Lampport, Messrs. C.	Bindon House, Wellington, Som.	1 0 0
Lane, A. P.	c/o Messrs. Clark & Co.,	
	Solicitors, Ludlow	1 1 0
Lang, W. and J.	Hambridge, Somerset	1 0 0
Langley, B. W.	King's Lynn, Norfolk	1 0 0
Lankester, P.	Messrs. Lankester & Co., 71,	
	Southwark Street, London, S.E.	1 0 0
*Lansdowne, Marquis of	Bowood, Calne	2 0 0
Larkworthy, E. W.	Messrs. J. L. Larkworthy & Co.,	
	Worcester	1 0 0
Lascelles, Rev. E.	Newton St. Loe, Bristol	1 0 0
†Latham, T.	Dorchester, Oxon . . . . .	..
*Laverton, W. H.	Leighton House, Westbury, Wilts	2 0 0
Lawrence, J.	Stall Pitt's Farm, Shrivenham	1 0 0
Lawrence, J. H. H.	1, Lynwid Villas, Bath	1 1 0
*Leconfield, Lord	Petworth, Sussex	2 0 0
Lee, Major-Gen. H. H.	The Mount, Dinas Powis, near	
	Cardiff	1 0 0
Leech, T.	Beaufort Arms Hotel, Raglan.	0 10 0
Lees, Sir Elliott, Bart., M.P.	South Lychett Manor, Poole,	
	Dorset	1 1 0
Legg, E. Gapper	Melplash Court, Melplash, Dorset	1 0 0
Lency, H.	Court Lodge, West Farleigh,	
	Kent	1 0 0
Lethbridge, Charles.	Carlton Club, Pall Mall, London.	1 0 0
†Lethbridge, J. C. Baron	Tregeare, Launceston . . . . .	..
*Lethbridge, W.	Courtlands, Lympstone	2 0 0
Leverton, W.	Woolleigh Barton, Beaford, North	
	Devon	0 10 0
Lewis, James	Plasdraw, Aberdare	1 1 0
Lewis, Sir W. T.	The Mardy, Aberdare	1 0 0
Lewis, Wm., and Son	Herald Office, Bath	1 0 0
†Ley, John Henry	Trehill, Exeter . . . . .	..
†Leyland, C. J.	Haggerston Castle, Beal, North-	
	umberland . . . . .	..
Liddon, E., M.D.	Silver Street House, Taunton.	1 0 0
Lippincott, R. C. C.	Over Court, near Bristol	1 0 0
†Lisburne, Earl of	Crosswood, Aberystwith, S. Wales	..

Name.	Residence.	Subscriptions.		
		£	s.	d.
J.	Warninglid Grange, Haywards Heath	1	1	0
A., and Co.	Dursley, Gloucestershire	1	1	0
ock, Baron	The Hendre, Monmouth	1	1	0
Evan H., M.P.	Langford Court, Langford, Bristol	1	0	0
W. J.	Southwood, Tiverton	2	2	0
, Sir J. T. D., Bart.,	Penllergare, Swansea	1	1	0
Robert	Plas Cilybebyll, Swansea	1	0	0
C. E.	Saltford, near Bristol	1	0	0
.	The Grange, Honiton	1	0	0
.	Ogbourne St. Andrew, Marlborough	1	0	0
lt. Hon. Walter H.,	Rood Ashton, Trowbridge	1	0	0
William	Woodlands, Congresbury, Somerset	1	0	0
Y. Buller	Maristow, Roborough, Plymouth.	2	0	0
. Hon. Sir M., Bart.	Maristow, Roborough, Devon	1	1	0
others	Cathedral Dairy Co., Exeter	0	10	0
Amos	Winsford, Dulverton	1	0	0
T.	Bossington, Allerford, Taunton	1	0	0
C.	St. James' Dairy, Bath.	1	0	0
Sir John, Bart., M.P.	High Elms, Hayes, Kent	1	0	0
-Col. H. F. E.	Dunchideock House, near Exeter	1	0	0
f. B.	Brockampton, Worcester	1	0	0
apt. A. F.	Court House, East Quantoxhead, Bridgwater	1	0	0
J. F.	Dunster Castle, Somerset	2	0	0
ew, J. J.	Lukesland, Ivybridge	1	1	0
nt, H. L. B.	Bishopswood, Ross.	1	0	0
J., F.C.S.	Bosvigo Farm, Truro	1	0	0
A. G.	Lake Farm, Bishops Cleeve, near Cheltenham	1	0	0
Mrs. C. M.	Haverling Park, Haverling atte Bower, Essex	1	1	0
J., and C. (Limited)	Bridgwater	1	0	0
Richard, M.P.	Cockington, Torquay	1	0	0
J.	Hambridge, Curry Rivell, Taunton	1	1	0
A. E.	Astol, Shifnal, Salop	1	0	0
J. B., Bart, M.P.	Childwickbury, St. Albans	1	0	0
.	High Trees, Redhill, Surrey	1	0	0
V. H.	Rampton, Bath	1	0	0

Name.	Residence.	Sub- scriptions.
Marker, Richard	Combe, near Honiton	£ s. d. 1 0 0
Marshall, Sons, and Co.	Britannia Iron Works, Gainsboro'	1 1 0
Martin, Christopher	Broad Clyst, Exeter	0 10 0
†Martin, G. E.	Ham Court, Upton-on-Severn . . . . .	..
Martin, J.	Thorverton, R.S.O., Devon	1 0 0
*Maskelyne, N. Story	Basset Down House, Swindon	2 2 0
Mason, A.	North Hill, Swansea	1 0 0
*Mason, J.	Eynsham Hall, Oxon	2 0 0
Massey, F. I.	54 & 55, Bunhill Row, London, E.C.	1 0 0
Mathews, Ernest	Chequers Mead, Potters Bar	1 0 0
Mathias, W. H., J.P.	Porth, near Pontypridd	1 0 0
Maule, M. St. John	Chapel House, Bath	1 0 0
May, A. C.	Avon House, Stoke Bishop, Bristol	1 0 0
Maynard, W. T.	Yeovil	1 0 0
†Mayo, Henry	4, Temple Terrace, Dorchester . . . . .	..
†Mayo, John	Coker's Frome, Dorchester . . . . .	..
McMurtrie, J.	Southill, Radstock, near Bath	1 0 0
Meade, F.	Langport, Somerset	1 0 0
Meade-King, W. O.	Walford, Taunton	1 0 0
Medland, W. R.	Yard Farm, Silvertown, Cullompton	0 10 0
Medlicott, Henry E.	Potterne, Devizes	1 0 0
Meek, A. Grant	Hillworth House, Devizes	1 1 0
Merry, Richard	Goulds, Broad Clyst, Exeter	0 10 0
Merry, W. F.	Ash Clyst, Broad Clyst, Exeter	1 0 0
Merryweather, J. C.	Hollies, Blackheath	1 0 0
Methuen, Major-Genl. Lord, C.B., C.M.G.	Corsham Court, Wilts	1 0 0
Micklem, H. . . . .	.. . . .	1 0 0
Mildmay, Rev. A. St. J.	Hazlegrove, Sparkford, Bath	1 1 0
Mildmay, Capt. C. B. St. J.	Hallam, Dulverton	1 0 0
*†Mildmay, Sir H. St. John, Bart.	Dogmersfield Park, Hartford Bridge, Winchfield . . . . .	..
†Mildred, G. B.	Butleigh, Glastonbury . . . . .	..
Miles, A.	Winchcombe Street, Cheltenham	1 0 0
†Miles, Sir H. R., Bart.	Abbots Leigh, Clifton, Bristol . . . . .	..
Millard, H.	Shrivenham, Berks	1 0 0
Millard, J. F.	Butleigh, Glastonbury	1 1 0
Mills, P. L.	Ruddington Hall, Nottingham	1 0 0
Minton, T. S.	Montford, Shropshire, R.S.O.	1 0 0
Mirehouse, H.	St. George's Hill, Easton-in-Gor- dano	1 0 0
†Mitchell, F. J.	Llanfreckfa Grange, Caerleon, Mon. .. . . .	..
Monk, C. J.	5, Buckingham Gate, London, S.W.	1 0 0
*Montagu of Beaulieu, Lord	Palace House, Beaulieu, Hants	2 0 0
Montefiore, Mrs.	Worth Park, Crawley	1 1 0
Moody, C.	Weston House, Evercreech	1 0 0
†Moore, H. F.	42, Angel Road, Brixton, London, S.W. . . . .	..
*Moore-Stevens, J. C.	Winscott, Gt. Torrington, Devon	3 0 0
Morel, Sir T.	The Llandens, Penarth	1 0 0

Subscriptions.

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Name.	Residence.	Subscriptions.		
		£	s.	d.
on, Lord	Sarsden House, Chipping Norton	2	2	0
n, Hon. F. C.	Ruperra Castle, Newport, Mon. .	2	0	0
-Richardson, C.	Noyadd Wilym, Cardigan . . .	1	0	0
d, Charles W.	Elmscroft, West Farleigh, Maidstone	1	1	0
r, Earl of	Saltram, Plympton, Devon . . .	2	0	0
ll, G. Herbert, M.P.	Headington Hill Hall, Oxford . .	2	2	0
and Griffin (Limited)	Maindee, Newport, Mon.	1	1	0
Son & Peard	Auctioneers, North Curry, Taunton	1	0	0
Sir R. A.	Sketty Park, Swansea	1	0	0
W.	4, Norton Road, Hove, Brighton.	1	0	0
, G. W.	Wasing Place, Reading			
-Edgcumbe, Earl of	Mount-Edgcumbe, Devonport . .	2	2	0
tevens, J.	Railway Hotel, Yatton	1	0	0
ow, E.	Castlehead Grange, Lancashire . .			
ow, E., jun.	Bury, Lancashire			
as, W. H.	Westfield Place, Battle, Sussex . .	2	2	0
, T.	Aberfeldy, The Shrubbery, West-ton-super-Mare	1	0	0
H.	c/o Foley, Son and Mundy, Trowbridge	1	0	0
Capt. G.	Elmsleigh, Send, Woking	1	0	0
P. A., M.P.	Dunsmore, near Rugby	1	1	0
, Col. Wyndham, M.P.	10, Rutland Gate, London, S.W.	1	0	0
-Anderdon, H. Edward	Henlade House, Taunton	1	1	0
Col. W. D.	84, Cornwall Gardens, London, S.W.	1	0	0
H. B.	Chippenham	1	1	0
D. T.	London, Glos. and N. Hants Dairy Company, Bristol	1	0	0
F.	Macknade, Faversham	1	1	0
Sir A. W., Bart.	Grittleton, Chippenham	1	0	0
C. W.	Carnarvon Arms, Dulverton, Somerset	0	10	0
r. W.	The Grange, Wenvoe, Glamorgan	1	0	0
-Grenville, Robert	Butleigh Court, Glastonbury . . .			
, F. M.	Barton Grange, Taunton	1	0	0
n, J. G.	Millaton House, Bridestowe, Okehampton			
re. S.	Tilgate, Crawley, Sussex	1	0	0
l.	Brockton House, Shifnal, Salop . .	1	0	0
nton, Earl of	77, Pall Mall, London, S.W. . . .	2	0	0
, H. T.	Cushuish, Kingston, Taunton. . .	1	0	0
, Thomas	Churchill Farm, Loxbeare, Tiverton	0	10	0
te, Hon. Sir S. H., M.P.	25, St. James's Place, London, S.W.	1	0	0
imberland, Duke of	Albury Park, Guildford	5	0	0
R.	Woodbourne, Shepton Mallet . . .	1	1	0

Subscriptions.

Name.	Residence.	Subscriptions.
		£ s. d.
Okeden, Col. U. P.	Turnworth, Blandford	1 0 0
Oldfield, W.	Berrers Hall, Walton, S.O., Norfolk	1 0 0
Oliver-Bellasis, Captain	Shilton House, Coventry	1 0 0
*Onslow, Earl of, G.C.M.G.	7, Richmond Terrace, Whitehall, London, S.W.	2 0 0
†Ormerod, Miss E. A.	Torrington House, St. Albans	1 0 0
Osborn, C.	Woolston, North Cadbury, Bath	1 0 0
Osborne, J.	9, Clifton Park, Clifton	1 0 0
Ovey, R.	Badgemore House, Henley-on-Thames	1 0 0
Paget, L. C.	Amerdown, Radstock	1 0 0
*Paget, Rt. Hon. Sir R. H., Bt.	Cranmore Hall, Shepton Mallet	2 0 0
Pain, Charles	Grosvenor House, Stockbridge, Hants	1 1 0
Palairret, H. H.	Cattistock Lodge, Dorchester	1 1 0
Palmer, G. W.	Marlston House, Newbury	1 0 0
†Palmer, R.	Lodge Farm, Nazeing, Waltham Cross	1 0 0
Parker, Admiral	Delamore House, Ivybridge	1 0 0
†Parker, Hon. Cecil J.	Eaton Estate Office, Eccleston, Chester	1 0 0
Parker, Col. R. J. II.	Bywood Cottage, Woolston, Southampton	1 0 0
Parker, H. C. G.	Brookton Grange, Shifnal, Salop.	1 0 0
Parker, T.	High Street, Shepton Mallet	1 0 0
Parkin, Paxton William	2, Major Terrace, Seaton, Devon	1 0 0
Parry, T.	Newport, Mon.	1 0 0
†Parsons, H. J. D.	Bampfylde House, Exeter	1 0 0
†Parsons, J. D. Toogood, jun.	Ashurst Place, Langton, Tunbridge Wells	1 0 0
Parsons, R. M. P.	Misterton, Crewkerne, Somerset	1 0 0
Part, C. T.	Aldenham Lodge, Radlett, St. Albans	1 0 0
Partridge, H.	Castle Hill, Betchingley, Surrey	1 0 0
Pass, A. C.	The Manor House, Wootton Fitzpaine, Charnmouth	1 0 0
Peacock, E.	14, Union Street, Bath	1 0 0
Pearson, E. & W.	African Chambers, Liverpool	1 0 0
Pearson, J. W.	Shirley, Southampton	1 1 0
Peel, Mrs.	Coombe Lodge, Bruton	1 0 0

Subscriptions.

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Name.	Residence.	Sub- scriptions		
		£	s.	d.
er, G. H.	Tantier Park, Basingstoke . . .	1	0	0
arves, W. Cole	Pendarves, Camborne, Cornwall .	1	1	0
y, Thomas	Taunton	1	0	0
y, T. S.	Musgrove Farm, Taunton . . .	1	0	0
val, P.	Somerset Court, Brent Knoll, Highbridge	1	1	0
ns, Col. E. K.	Shales, Bittern, Hants . . .	1	0	0
y-Herrick, Mrs.	Beau Manor Park, Loughborough .			
rs, Wm. Parsons	Glencairn, Wells Road, Bath . .			
erick, R.	Acland Barton, Landkey, Barnstaple	1	0	0
ifer, T. Valentine, t.C.V.S.L.	The Limes, Tetbury, Gloucester .			
p, D. W.	The Ashes, Whitacre, Birmingham	1	0	0
lips, C. D.	The Gaer, Newport, Monmouth . .			
, Capt.	Pendoggett, Timsbury, near Bath	1	1	0
oen, C. C.	Weston Bampffield, Sparkford, Bath	1	0	0
tt Brothers and Co. . . .	59, Bishopsgate Street Without, London	1	0	0
W.	High Pennard House, Bryn Road, Swansea	1	0	0
kney, Erlysman C. . . .	Berwick St. James, Salisbury . .			
y, F.	The Grange, Somerton, Somerset.	1	0	0
ey, R. W.	Farnley House, Dursley, Glos. . .			
an, T.	Merryland, Galhampton . . .	1	0	0
A. G.	The Firs, Highbridge	1	0	0
J. E.	Bruntwood, Cheadle, Cheshire . .	1	0	0
A. E.	Grove House, Weston, Bath . . .	1	0	0
imore, Lord	Poltimore Park, Exeter.	3	3	0
hele, Thos. R.	Polwhele, Truro	1	1	0
S.	Blandford, Dorset	1	0	0
er, E.	9, 10 and 11, Queen Square, Bath	1	0	0
, H. R.	South Petherton, Somerset . . .	1	0	0
Alfred	Dorchester	1	0	0
John	Nowers, Wellington, Somerset . .	1	0	0
R. J.	Beresford Manor, Plumpton, Lewes	1	0	0
e, Rev. W. J. P.	Godmanstone Rectory, Dorchester			
R.	New London Hotel, Exeter . . .	1	0	0
, J. A.	Edgarley, Glastonbury	1	0	0
al, Melville	Laverstoke House, Micheldever . .	2	0	0
l, Wyndham	Malshanger, Basingstoke . . .	1	0	0
er, R.	Denewood, Broadlands Road, Highgate, London, N.			
man, Hon. C. B.	Child-Okeford, Blandford, Dorset			
man, Hon. E. W. B. . . .	Hestercombe, Taunton			
man, Viscount	Bryanston, Blandford	5	0	0
r, F. P.	Gate Works, King's Lynn	1	0	0
r, M. K. M.	Aston Court, Ross	1	0	0
nder, Sir J. Dickson, rt, M.P.	Hartham Park, Corsham	2	0	0
J. D.	Pratts Hayes, Exmouth	1	0	0
Hermann C.	Drayton, near Taunton.	1	0	0

)

Name.	Residence.	Sub- scriptions.		
		£	s.	d.
Price, J. W.	Newport Pottery Co., Newport, Mon.	1	0	0
*Prior, R. C. A.	Halse House, near Taunton . . .	2	0	0
Proctor, H. and T.	Cathay, Bristol	1	1	0
Puddy, G. A.	Huntspill, Bridgwater	1	0	0
Pulley, Sir J.	Lower Eaton, near Hereford . .	1	0	0
†Purgold, A. D.	Park View Farm, Combermere, Whitchurch, Salop	1	0	0
Purrott, W.	Cunnynhame Hill, St. Albans . .	1	0	0
Quirk, Rev. Canon	Bath	1	0	0
*Ramsden, J. C.	Willinghurst, Guildford	2	0	0
Ransome, James Edward	Orwell Works, Ipswich	1	1	0
Rashleigh, Jonathan	Menabilly, Par Station, Cornwall	1	0	0
Rawlence, Ernest A.	Newlands, Salisbury.	1	0	0
Read, A. M.	Livingshayes, Silvertown	1	0	0
Read, B.	Quedgeley Manor Farm, Gloucester	1	0	0
Rees, W. J.	Laurels, Swansea.	1	1	0
Reeves, Robert and John, and Son	Bratton Iron Works, Westbury, Wilts	1	0	0
Reid, P. V. A.	Belcombe Brook, Bradford-on- Avon	1	0	0
Rendell, R. F.	Torbryan Rectory, Newton Abbot	1	0	0
Rew, H. G.	The Barton, Whipton, Exeter . .	1	0	0
Reynolds, W.	High Ham, Langport	0	10	6
Rhoades, W. W.	Troyte Estate Office, Huntsham, Bampton	1	0	0
Rice, H. E. H.	Dane Court, Dover	1	0	0
Rich, F. W.	Royal Nurseries, Sandford, Bristol	1	0	0
Richards, T. B.	East Pennard, Somerset	1	0	0
Richards, W. F.	Beaumont, Broad Clyst, Exeter .	1	0	0
Richardson, J. C.	Glanbrydau Park, Manordilo, R.S.O., Carmarthen	1	0	0
Rickeard, Silas	Newlyn East, Grampcund Road, Cornwall	1	0	0
Ridler, James	Blackford, Selworthy, Minehead .	1	0	0
Ridler, T. K.	Minehead, Taunton	1	0	0

Name.	Residence.	Sub- scriptions.
		£ s. d.
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Rivers, Genl. Fox-Pitt. : . .	Rushmore Lodge, Salisbury . .	1 0 0
*Robartes, Lord	Lanhydroc, Bodmin	2 0 0
Roberts, J. D. Cramer	Thornton, Frant, Sussex	1 1 0
Roberts, J., and Son	Bridgwater	1 1 0
Robertson, R. T.	The Church Farm, Babraham, Cambridge	1 0 0
Robins, J.	High Bray, South Molton	0 10 0
Robinson, S.	Lynhales, Kington, Herefordshire	1 0 0
Robinson, John, and Co. . . .	Bristol	1 1 0
Robinson & Auden (Limited)	Wantage, Berks	1 0 0
Roderick, W. Buckley	Llanelly	1 0 0
Roe, W. J.	West Pennard, Glastonbury . . .	1 0 0
Rolle, Hon. Mark	Stevenstone, Torrington	1 1 0
Rootes, C.	Distillery, Hereford	1 0 0
Rossiter, James	West Town, R.S.O., near Bristol	1 0 0
Rothschild, Lord	Tring Park, Herts	1 0 0
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Royal Guernsey Agricultural and Horticultural Society .	Guernsey	1 0 0
Ruegg, L. H.	Sherborne	0 10 0
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Saillard, P.	Buchan Hill, Crawley, Sussex . .	1 0 0
Sainsbury, T. H.	Beckington Rectory, Bath	1 0 0
*Saint Germans, Earl of . . .	Port Elliot, St. Germans, R.S.O., Cornwall	3 3 0
St. Maur, Lord P.	Barton Hall, Loughborough, Leicester	1 0 0
Salmon, H. C.	North Fields, Bridgwater	1 0 0
Salmon, W.	Yonder Broadpool Farm, Doult- ing, Shepton Mallet	1 0 0
Salter, Benjamin	Newlands, Broad Clyst, Exeter . .	1 0 0
Samuelson, Rt. Hon. Sir B., Bart.	Banbury	1 0 0
Samuelson, Ernest	Bodicote Grange, Banbury	1 1 0
Sanders, E. A.	Stoke House, Exeter	1 0 0
†Sanders, E. J.	Stoke House, Exeter . . . . .	. . .
Sanders, W. D.	Manor Farm, Grenton, Bridg- water	1 0 0
Sanford, E. C. A.	Nynehead, Wellington, Somerset	1 1 0
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Name.	Residence.	Subscriptions.		
		£	s.	d.
Anders, G., jun.	Lydeard House, Taunton	1	0	0
Barth, L., M.A.	Elmslea, Bath.	1	1	0
Cobell, Col. Barton L. J. . .	Kingwell Hall, High Littleton, near Bristol	2	2	0
Cott-Hall, H.	Dormington Court, Hereford . .	1	0	0
Cott, R. W.	East Lambrook, S. Petherton . .	1	0	0
Scott, T.	Ditton Court, Maidstone			
Scrutton, D. R.	Ogwell, Newton Abbott	2	2	0
Arch, Miss B.	Cowie, Stonehaven, N.B. . . .	1	0	0
Seaton, Lord	Beechwood, Plympton, Devon . .			
Senior, H.	Rushton, Blandford, Dorset . .	1	0	0
Seymour, R. A. H.	46, Earl Street, Maidstone (Hon. Local Sec., 1884)			
Snackell, R.	Lower Swainswick House, Bath .	1	0	0
Snakerley, Col. H. W. . . .	Burgate, Godalming	1	0	0
Snaw, J. E.	Deane Court, Bishops Lydeard, Somerset	1	0	0
Shaw-Stewart, Walter R. . .	Berwick House, Hindon, Salis- bury			
Shears, W.	Lee Farm, Pyrford, Woking Station	1	0	0
Shelley, Sir John, Bart. . .	Shobrooke Park, Crediton	1	1	0
Shelley, J.	Redlynch Park, Chewton Keyn- sham, Bristol	1	0	0
Sherston, Major C. D. . . .	Evercreech, Somerset			
Sherston, T. P. D.	Estate Office, Gargrave, Yorks . .			
Shore, J. H.	Whatley House, Frome	1	0	0
Shillifant, A. O.	Combe House, Copplestone, N. Devon	1	0	0
Shims, G. T.	Land Agent, Abbey Road, Neath .	1	0	0
Simmons, Henry	Bearwood Farm, Wokingham . . .			
Simpsen, F. C.	Maypool, Churston Ferrars, R.S.O., S. Devon	1	0	0
Snclair, James	9, New Bridge Street, Ludgate Circus, London, S.E.	1	0	0
†Singer, A. M.	Redworth, near Totnes			
Singer, W. M. G.	Streatfield, Paignton, Devon . .	5	0	0
Sninner, A. C.	Pound Farm, Bishop's Lydeard, Taunton	1	0	0
Skrine, Henry Duncan . . .	Claverton Manor, Bath	2	0	0
Snriue, Col. H. M.	Warleigh Manor, Bath	1	1	0
Snade, A. H.	Stock Exchange, London, E.C. . .	1	0	0
Snlater, A.	Gloucester Carriage Works, Glou- cester	2	2	0
Snart, G. E.	Combe Hay Manor, Bath	1	1	0
Snith, A. J.	Highgrove, Totterdown, Bristol .	1	0	0
Snith, Hon. W. F. D., M.P. .	Greenlands, Henley-on-Thames . .	5	0	0
Snith, Hugh C.	Mount Clare, Roehampton	1	0	0
Snith, J. W.	Thinghill Court, Hereford			
Snith, S. Lee	Larkfield, Maidstone			
Snith, W.	Sundon House, Clifton Down, Bristol	1	0	0

Subscriptions.

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Name.	Residence.	Subscriptions.		
		£	s.	d.
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*†Smyth, Sir J. H. Greville, Bart.	Ashton Court, Bristol			
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Snow, A. D.	Neston, Combe Park, Bath	1	1	0
Solley, G. C.	Clarence House, Sandwich	0	10	0
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*Somerset, Duke of	Maiden Bradley, Bath	2	0	0
Somerset Trading Co.	Bridgwater	1	1	0
†Somerville, A. F.	Dinder House, Wells, Somerset			
Southwell, F. C.	75, Southwark Street, London, S.E.	1	0	0
†Spackman, Henry	6, Terrace Walk, Bath			
Spark, H. Smith	Pawlett, Bridgwater.	1	0	0
†Spearman, Sir J., Bart.	The Hall, Wem, Salop			
Speed, W. S.	Mill Farm, Priston, Bath	1	0	0
Speke, W., jun.	Jordans, Ilminster	1	1	0
Spencer, F.	Pondsmead, Oakhill, near Bath	1	1	0
Spencer, S.	Holywell Manor, St. Ives, Hunts	1	0	0
Spencer, W. C.	Hooke, Ireaminster, Dorset	1	0	0
Spicer, Capt.	Spye Park, Chippenham	1	0	0
Spicer, C.	Manor Farm, Bishops Caudle, Sherborne	1	0	0
Spire, Joseph	High Street, Glastonbury	1	0	0
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Stanford, A.	Eatons, Steyning, Sussex	1	0	0
†Stanford, W.	Eatons, Steyning, Sussex			
Stanhope, Hon. and Rev. B. L. S.	Byford Rectory, Hereford	1	0	0
*Stanley, E. J., M.P.	Quantock Lodge, Bridgwater	2	0	0
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Stephens, H. C., M.P.	Avenue House, Finchley, N.	1	0	0
*Stevens, J. W. A.	Penhill, Cardiff	2	0	0
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Stokes, C. W. Rees	Town Clerk, Tenby	1	0	0
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Stone, John S.	Clarence Place Works, Newport, Mon.	0	10	6
Stothert, P. K.	Keynsham Manor, Saltford, Bristol	1	0	0
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Subscriptions.

Name.	Residence.	Subscriptions.
		£ s. d.
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Boud, J. S. G. W.	Kingshill House, Knowle, Bristol	1 1 0
Bos, Peter	Blaisdon Hall, Newnham, Gloucestershire	1 0 0
Cheskey, Vincent	Hill House, Langport	1 0 0
Croftley, Sir G. S., Bart.	Moreton, Bideford	2 0 0
Curdy, T. E.	Estate Office, Basing Park, Alton	1 0 0
Curds, H.	Swansea	1 0 0
Currie, William	Bristol	1 1 0
Curton, M. J.	Henley Park, Oxon	2 0 0
Curton and Sons	Seedsmen, Reading	2 2 0
Curwick, R.	College Farm, Cirencester	1 0 0
Curwinbank, H.	Denham Court, Denham, Bucks.	1 0 0
Curves, J. H.	Coat Farm, Martock.	1 0 0
Cursons, J., and Co. (Limited)	The Plains, Totnes	1 1 0
Curbot, Miss	Margam Park, Port Talbot	1 0 0
Curbyn, P. Horden	Boode House, Brauntton, N. Devon	1 1 0
Curryes (Limited)	Cornwall Works, Birmingham	1 0 0
Curran, E. F.	Hawson Court, Buckfastleigh	1 0 0
Curry, David James	Knaplock, Winsford, Dulverton	1 0 0
Curry, J. A.	Knaplock, Dulverton	0 10 0
Curry, W., and Sons	Andover	1 1 0
Curry, J. A.	Fairfield, Wells, Somerset	1 0 0
Curry, C. W.	Hampton, St. Mary Church, Torquay	1 0 0
Curry, George	Crauford, Hounslow, W.	1 0 0
Curry, H. W.	Showle Court, Ledbury, Hereford	1 0 0
Curry, W. H.	Manor House, Taunton St. Mary's	1 0 0
Curry, Earl.	Newton Park, Newton St. Loe	2 2 0
Curryman, G. D.	Haselbury, Crewkerne	1 0 0
Curry, A., M.P.	Bronwydd, Cardiff	1 0 0
Curry, I.	Ely Farm, Cardiff	1 0 0
Curry, J.	Nantymadog, Senny Bridge, Brecon	1 0 0
Curry, J. C.	The Lodge, Colyford, Axminster	1 0 0
Curry, Col. White	Broomfield Manor, Exbourne, N. Devon	1 0 0
Curry, J.	Ringdale House, Faringdon, Berks	1 0 0
Curry, C. G.	Cardon Farm, Williton, Somerset	1 0 0

Name.	Residence.	Sub- scriptions.		
		£	s.	d.
Thorne, J.	Hall, High Bray, South Molton .	1	0	0
Thorne, J.	West Yard, N. Molton	0	10	0
Thorne, J. G.	Horridge, Romansleigh, S. Molton	0	10	0
Thresher, E. B.	Corfe Hill, Weymouth	1	0	0
Thring, D. T.	Central Hall, Bedford	1	1	0
Thring, J. Huntley	Alford House, Castle Cary. . . .	1	1	0
Throckmorton, Sir N. W., Bart.	Buckland, Faringdon, Berks . . .	1	0	0
Thurlow, G. R.	Stowmarket	1	0	0
*Thynne, Lord A.	48, Berkeley Square, London, W.	2	0	0
*Thynne, Lord H.	Muntham, Worthing	2	0	0
Till, William	Treworgan, Ross	1	0	0
Tilley, W. T. S.	Quaish Farm, N. Woolton, Shep- ton Mallet	1	0	0
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Tisdall, A.	Holland Park Dairy, London . . .	1	0	0
Titt, J. W.	Implement Maker, Warminster . .	1	0	0
Tompkins, B.	Water Finder, Pipsmore Farm, Chippenham	0	10	0
Toogood, E. K.	Messrs. Toogood & Sons, South- ampton	1	0	0
Toone, W. E.	Messrs. Carson & Toone, Wilts Foundry, Warminster	1	0	0
Treadwell, John	Upper Winchendon, Aylesbury . .	1	0	0
*Tredegar, Lord	Tredegar Park, Newport, Mon. . .	2	2	0
Trefusis, Hon. J.	Thorncombe, Crowcombe, Taun- ton	1	0	0
Treleven, J. T.	Hobbacott Farm, Launcells, N. Cornwall	1	0	0
Tremaine, James	Tregonning, St. Columb Minor, Cornwall	1	0	0
Tremaine, W. H.	Trerice, Newlyn East, Cornwall . .	1	0	0
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Trevilian, E. B. Cely	Port Town, Taunton	1	0	0
Treweke, W. H.	Ryne Hill, Kingham, Chipping Norton	1	0	0
Trotman, E. R.	The Elms, Frome	1	1	0
Troyte, H.	Huntsham Court, Bampton, Devon	1	0	0
†Troyte-Chafyn-Grove, G. . . .	North Coker House, Yeovil			
Trump, W.	Borough Farm, Broad Clyst, Exeter	1	0	0
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Tudge, W.	Leinthall, Ludlow	1	0	0
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Tugwell, H. W.	Crowe Hall, Bath	1	0	0
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Name.	Residence.	
Unite, John	291, Edgware Road, London . .	1
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Upham, W. A.	Slopeton Cottage, Chippenham .	1
Valletort, Viscount	Mount Edgecumbe, Devonport .	1
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†Walsingham, Lord	Merton Hall, Thetford, Norfolk .	1
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Waterloo Cake Mills Co. (Ld.)	Wilmington, Hull	1
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Name.	Residence.	Sub- scriptions.
		£ s. d.
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*Way, Gen. N. S.	Manor House, Henbury, Bristol .	2 0 0
Webb, E., and Sons	Wordesley, Stourbridge	1 0 0
Webb, Jonas	Melton Ross, Barnethy Junction, Lincoln	1 0 0
Were, J. Kennet	Sidmouth	1 1 0
West, R. B.	Streatham Hall, Exeter	1 0 0
Weston, H.	The Bounds, Much Marcle, <i>via</i> Dymock, Herefordshire	1 0 0
Weyman & Hitchcock (Ld.).	Cheltenham	1 0 0
†White, A. R.	Charnage, Mere, Wilts . . . . .	..
White, Arthur J.	Wrangaton, South Brent, R.S.O. .	1 0 0
White, F.	Torweston, Williton	1 0 0
White, George	Hunton, Maidstone	1 0 0
White, H.	Midge Hall Farm, Wootton Bassett	1 0 0
White, H. G.	Whitley, near Melksham	1 0 0
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Whitney, T. W.	Frithfield, Shepton Mallet	1 0 0
Whitting, C. E.	Sandcroft, Uphill, Weston-super- Mare	1 1 0
Whitting, E. M.	Totterdown, Uphill, Weston- super-Mare	1 1 0
Wicksted, C.	Shakenhurst, Cleobury Mortimer .	1 0 0
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Willcox, W. H., and Co.	36, Southwark Street, London . .	1 1 0
Willcox, W. T.	Hampton Hall, Bath	1 0 0
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Williams, A. G.	St. George's Brewery, Portsea, Hants	1 0 0
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*Williams, Edward Wilmot	Herrington, Dorchester	2 2 0
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Williams, I.	Ormond House, Weston, Bath . .	1 1 0
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Williams, J. C., M.P.	Werrington Park, Launceston . .	1 0 0
Williams, M. H.	Pencalerick, Truro	1 0 0
†Williams, M. Scott	Woolland House, Blandford . . . .	..
†Williams, Robert	Brideshead, Dorchester . . . . .	..
Williams, R.	Vesta Cake Company, 14 to 22, Blackstock Street, Liverpool . .	1 0 0
*Williams, Sir W. R., Bart.	Heanton, Barnstaple	2 2 0
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Willis, Sir William Henry, Bart., M.P.	Blagdon, R.S.O., Somerset . . .	1 0 0
Wills, W.	Caseley, Lustleigh, S. Devon . .	1 0 0
Willyams Ed. W. Bridges	Nanskeval, St. Columb, Cornwall .	1 0 0

Name.	Residence.	Subscriptions.
Wilmot, S. M.	Albert Road, St. Philips, Bristol	£ s. d. 1 0 0
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*Windsor, Lord	Hewell Grange, Bromsgrove	4 0 0
Wingfield, A. H.	Amphill House, Amphill	1 0 0
Winter, G.	Chedzoy, Bridgwater	0 10 0
Wippell, Richard	Thorverton, Devon	1 0 0
Wish, Thomas	Broad Clyst, Exeter.	1 0 0
Witcombe, S. G.	The Agency, near Salt, Stafford . .	1 0 0
Wodehouse, Rt. Hon. E. R., M.P.	56, Chester Square, London	1 0 0
†Wollocombe, Rev. J. B. . .	Stowford Rectory, Lewdown, Devon . . . . .	. . .
Wood, W. A., M. & R. Machine Co.	36, Worship Street, London, E.C.	1 1 0
Wood, W., jun.	Hassocks, Sussex	1 0 0
Woodhams, J.	Havelock Road, Hastings	1 0 0
†Woodiwiss, E. S.	Hill Place, Upminster, Essex. . . .	. . .
Woodiwiss, G.	Bath	1 0 0
Woodroffe & Co.	Albion Iron Works, Rugeley, Staffordshire	1 0 0
Woods, Col. Thomas	Llandaff Place, Llandaff	1 0 0
Workman, H. W.	Slimbridge, Gloucester.	1 0 0
Worth, H. M.	Broad Clyst, Exeter.	0 10 0
Wright, Brothers	Park Street, Hobart, Tasmania . .	1 0 0
Wright, F.	112, High Street, Cheltenham. . . .	1 0 0
Wright, Col. J. R.	Gowerton, Swansea	1 0 0
Wrightson, Prof. J.	College of Agriculture, Downton, Salisbury	1 0 0
Wroth, W. S.	Bigbury Court, Kingsbridge	1 0 0
Wyatt-Edgell, Col. A. . . .	Cowley Place, Exeter	1 1 0
Wyles, J.	Stonehouse Farm, Frindsbury, Rochester	1 0 0
Yeates, C.	Barrow Court Farm, Flax Bourton .	1 0 0
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Young, E. Burney	35, Wallbrook, London, E.C.	1 0 0
Young, W. Eaton, J.P. . . .	Hampton Hill House, Bath- ampton, Bath	1 1 0
Younts, J.	Oxford	1 0 0
Total	1202	

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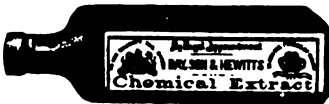
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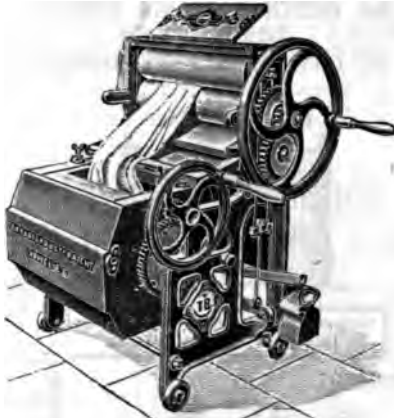
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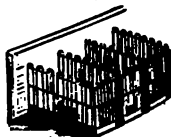
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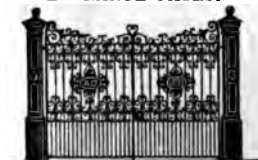


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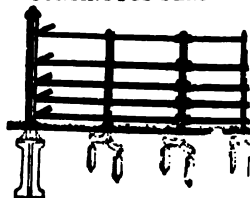


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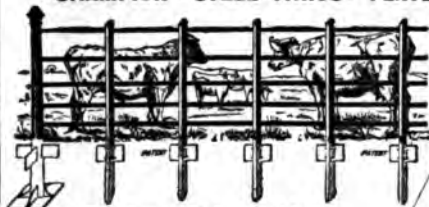
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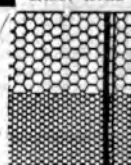
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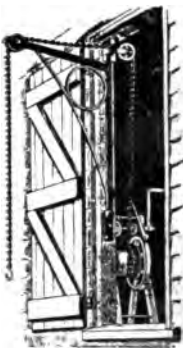
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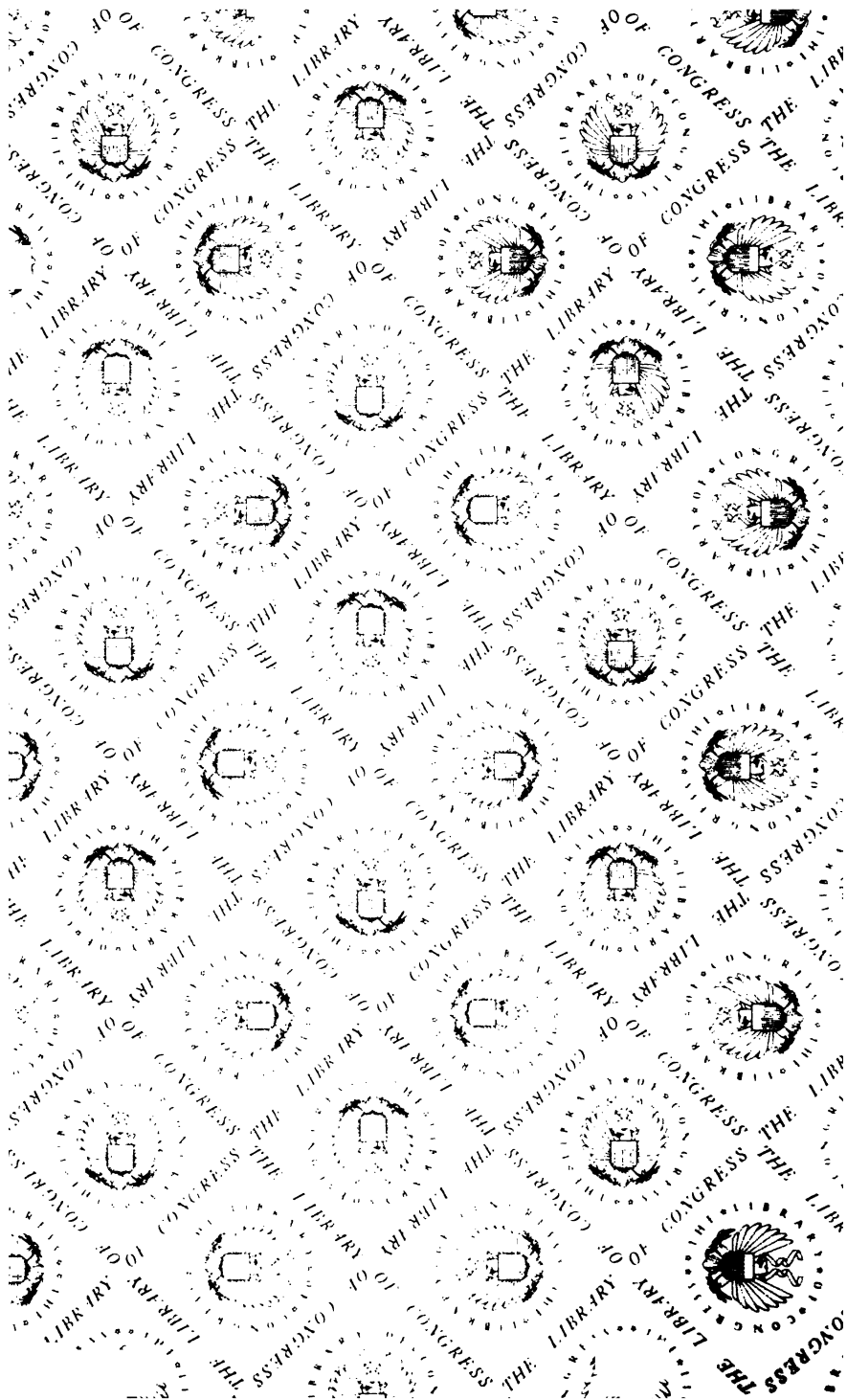
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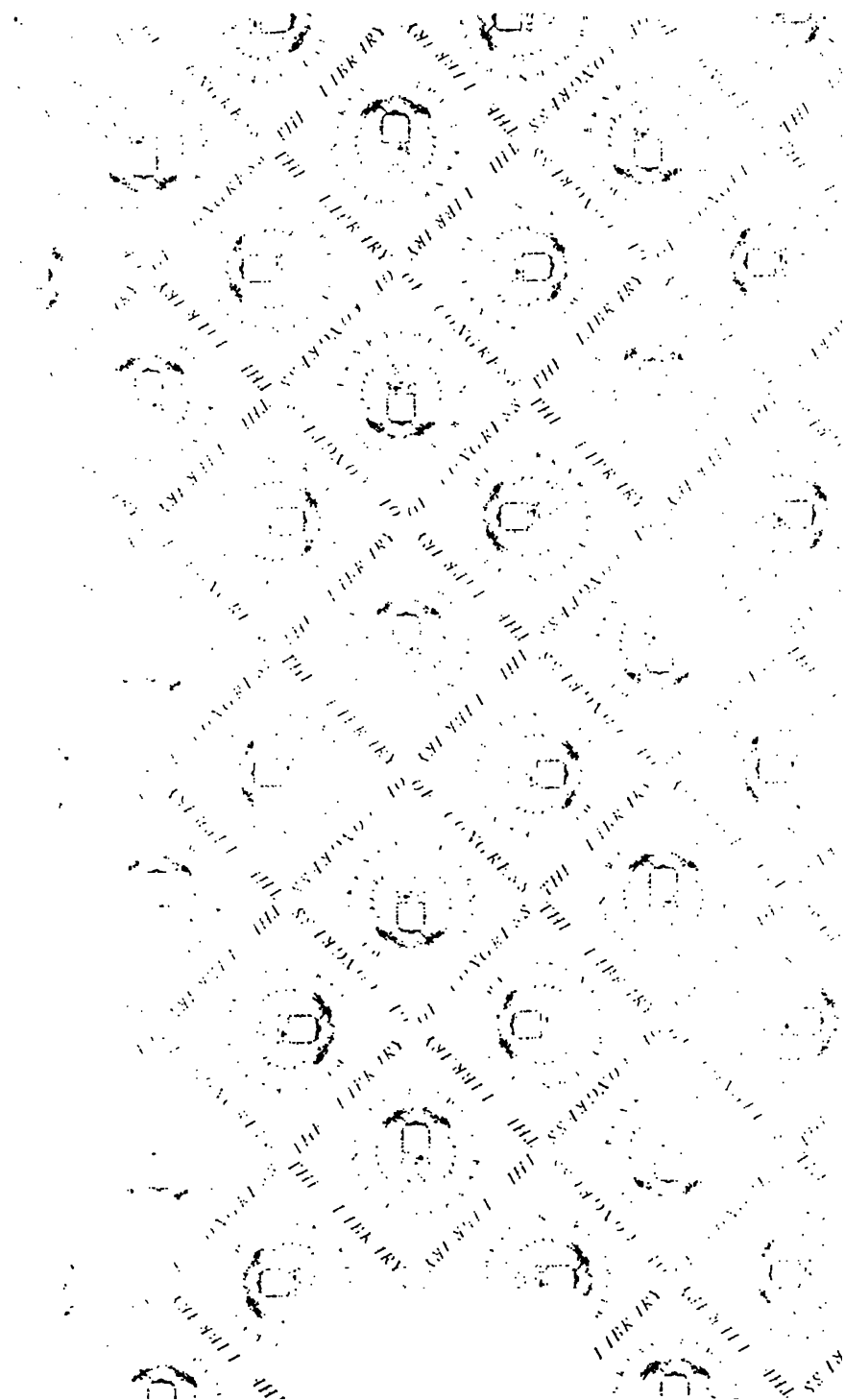
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